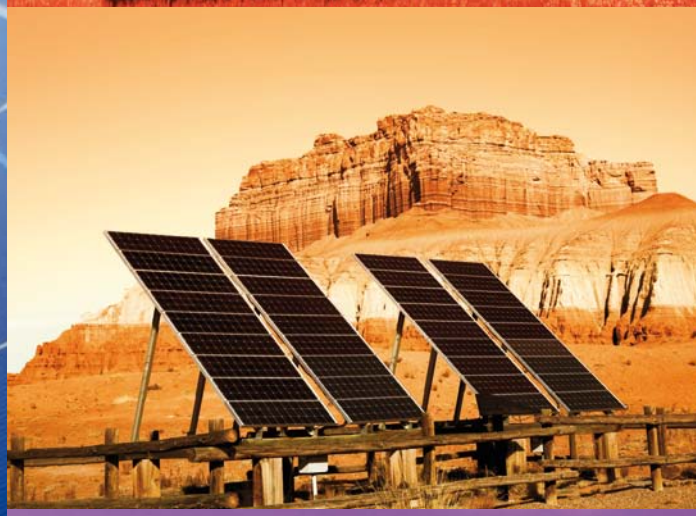
CATALOGUE

Photovoltaic production and Energy storage solutions

2014
2015



POWER CONTROL & SAFETY

SOLAR POWER

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Selection guide

	ON-GRID			
	Residential	Building	Solar Park	
PV production	SUNSYS H30i/H30iD 	SUNSYS B12 SUNSYS B15 	SUNSYS P66TL SUNSYS P100TL 	
	SUNSYS H30 	SUNSYS B20E 		
	SUNSYS H50 	SUNSYS B30 	SUNSYS P66TL1K SUNSYS P100TL1K 	
	SUNSYS H30+30i/H30+30iD 	SUNSYS P33TR SUNSYS P66TR 		
		SUNSYS P100TR 		
Power Conversion System and Storage		SUNSYS PCS² 33TR SUNSYS PCS² 66TR SUNSYS PCS² 100TR 		
Protection	RJB enclosures 	BJB enclosures 	FJB enclosures IFB enclosures 	
Supervision	PV MONITOR  		SUNGUARD	
Service				

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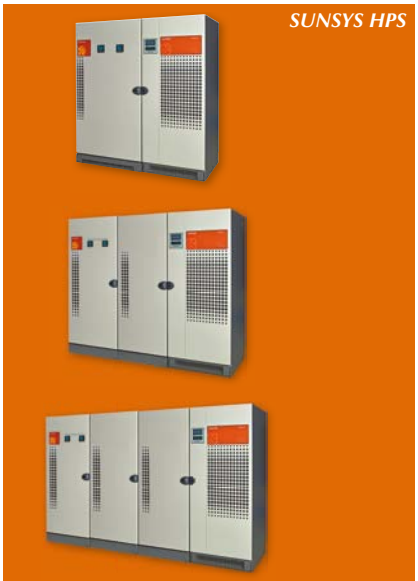
Contents

	OFF-GRID
Grid support	**Isolated area**
	SUNSYS HPS 
 *SUNSYS SHELTER*	
SUNSYS PCS² 66TL *SUNSYS PCS² 100TL*	
	FJB enclosures *IFB enclosures* 
	DIRIS
	CIM MAINTENANCE CONTRACTS
	REMOTE MONITORING SYSTEM *CIM THERMO* *CONSUMABLE PARTS REPLACEMENT*

An independent manufacturer

The benefit of a specialist

Founded in 1922, SOCOMEC is an industrial group with a workforce of 3000 people. Our core business - the availability, control and safety of low voltage electrical networks with increased focus on our customers' power performance.

The culture of independence

The SOCOMEC Group's independence ensures control over its own decision-making, respecting the values advocated by its own family shareholders and shared by its employees.

With around 30 subsidiaries located on all five continents, SOCOMEC pursues international development by targeting industrial and service applications where the quality of its expertise makes all the difference.

The spirit of innovation

As undisputed specialists in UPS systems, mains supply changeover, power conversion and measurement, SOCOMEC dedicates nearly 10% of its turnover to R&D. As a result the Group can achieve its ambition of always being one technological step ahead.

The vision of a specialist

As a manufacturer with complete control over its technological processes, SOCOMEC is quite unlike the more general providers. The Group is constantly improving its fields of expertise in order to offer its clients increasingly customised, appropriate solutions.

A flexible manufacturing structure

Backed by two European centres of excellence (France and Italy), the Group also benefits from competitive production sites such as Tunisia and locations in the major emerging markets (India and China).

These sites have all implemented a system of continuous improvement based on Lean Management principles, and are therefore in a position to provide high levels of quality, and meet the deadlines and cost requirements expected by customers.

The focus on service

Our manufacturer's expertise naturally extends to a complete range of services designed to facilitate the research, implementation and operation of our solutions. Our service teams have built their reputation on reassuring guidance, flexible skills and reactivity.

Responsible growth

As a Group which is open to all cultures and firmly committed to human values, SOCOMEC promotes employee initiative and commitment. Working relationships are based on the idea of partnerships and respect for shared ethics. Through the company's commitment to achieving harmonious, lasting development, SOCOMEC fully embraces its responsibilities not only towards its shareholders, employees, customers and partners, but also towards society as a whole and its environment.

SOCOMEC has been a signatory to the Global Compact since 2003.

ENERGY SPECIALIST SINCE 1922

THE GLOBAL COMPACT WE SUPPORT

Four key applications: the know-how of a specialist

Critical Power

Ensuring the availability of high-quality power for critical applications.

Thanks to the company's wide range of continuously evolving products, solutions and services, SOCOMEC are experts in the three essential technologies that can ensure the high availability of supply to critical facilities and buildings i.e.:

- uninterruptible power supplies (UPS) that provide high-quality power and reduce distortion and interruptions to the mains supply due to their power storage backup,
- changeover of high availability sources to transfer supply to an operational backup source,
- continuous monitoring of installation facilities to prevent failures and reduce operating losses.


SITE 628A

Power Control & Safety

Managing power and protecting individuals and property.

SOCOMEC's expertise in this domain is unquestionable; the company is an undisputed leader in power switching and changeover functions, and has been a specialist manufacturer of electrical equipment since 1922. The company has long defended the benefits of fuse protection for individuals and property, and has become a major player in cutting-edge technology such as the monitoring and detection of insulation defects. SOCOMEC guarantees solutions and services which are both relevant and efficient.


APPLI 575A

Solar Power

Guaranteeing the safety and durability of photovoltaic (PV) facilities.

As experts in the solar energy equipment field, SOCOMEC has all the specialist know-how for implementing key strategic functions in on-grid and off-grid PV facilities, including:

- safety, through specially designed switch disconnectors to cut the DC current generated by solar panels regardless of the facility configuration and operating conditions,
- the reliability of DC facilities thanks to solutions preventing the degradation of insulation and electric arc failure in DC current,
- control of very high-efficiency energy conversion, via PV inverters, to transform all energy generated by the solar panels into power to be consumed locally or re-injected into the national grid,
- PV production and energy storage solutions for on-grid and off-grid applications.


SITE 441A

Energy Efficiency

Improving building and facility energy efficiency.

SOCOMEC solutions, ranging from sensors to the wide choice of innovative, modular software packages, are driven by experts in energy efficiency. They meet the essential requirements of managers or operators of tertiary, industrial or local authority buildings, and make it possible to:

- measure power consumption, identify sources of excess consumption, and raise occupant awareness,
- limit reactive energy and prevent associated tariff penalties,
- use the best tariffs, check supplier invoicing and accurately distribute energy bills amongst consumer entities.


APPLI 576A

Increased energy efficiency

innovative solutions

A basic requirement

A high-quality power supply that is constantly available is absolutely vital in many industries, including applications in IT, industry and infrastructure. For many medical applications, power supply is a matter of life and death. SOCOMEC has more than 40 years experience in providing power supply protection for such sectors.

Solutions to meet every need

Thanks to our substantial R&D resources, our product range is continuously evolving based on our contact with clients.

To guarantee maximum availability we offer the most advanced technology, combined with innovative energy storage systems.

Our solutions have been approved by the most demanding users: telecommunications industry operators around the world, ministries of defence, nuclear industry operators, etc.

Recognized expertise

SOCOMEC is not only a specialist manufacture; we also an award-winning company recognized for our customer focus. Awards include:

- Customer Service Excellence (2004),
- Product Innovation (2006),
- Best Practice Award for "European Energy & Power Systems Product Line Strategy" (2009),
- European UPS New Product Innovation Award (2011),
- European UPS Product Differentiation Excellence Award (2013).

Focused on customer needs

Our sales and after-sales service network is on-hand for you… anytime. Our clients/partners recognize the quality of our products, our availability and rapid response to individual needs and the commitment which characterises everything we do.

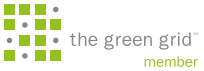
Continuous innovation

The facts speak for themselves:

- First French provider to offer static power supply units (1968),
- Designer of the first UPS with Pulse Width Modulation (PWM) technology (1980),
- Provider of the world's first UPS range with integrated IGBT technology (1990),
- Designer of the first modular, scalable, redundant UPS (2000),
- First company to integrate hybrid components (2001),
- First company to provide a 200 kVA UPS with IGBT rectifier (2003),
- New battery charger system (2004),
- Dynamic energy storage solution (flywheel) (2006),
- First UPS with 96 % efficiency in online double conversion mode (2007),
- A more compact Static Transfer Switch (STS) in a 19" rack with hot-swap functionality (2009),
- A more compact 900 kVA UPS (2010),
- First complete UPS range (from 10 kVA to 4 MVA) with three-level technology, with 96 % efficiency and power factor 1 (2012).

SOCOMEC joined the United Nations **"Global Compact"** in 2003 to tackle the social and environmental challenge of globalisation.

ISO 14001. This international standard recognize SOCOMEC's determination to pursue its goal of protecting the environment.



The Green Grid™ is an organisation dedicated to improving the efficiency of data centre resources and business computing ecosystems.

By signing the **European Code of Conduct** on data centres, SOCOMEC has agreed to adopt energy-saving solutions for such facilities, while simultaneously extending the life cycle and availability of the system's performance.

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The solution for any requirement

whatever your system

SOCOMEC solutions for photovoltaic applications cover any requirement for low-voltage energy conversion, control and safety. Our inverters, monitoring, supervision, disconnection and protection systems, not forgetting the innovative energy storage, hybrid and container solutions, provide maximum quality and energy efficiency for all types of photovoltaic systems.

For systems of any size

The different panel and conversion technologies available today allow you to choose the most suitable solutions for any application. SOCOMEC has the right solution regardless of the application – residential, building, solar park – and power.

Certified efficiency and reliability

SOCOMEC has many testing laboratories for testing and validating the technology developed and the solutions offered: one in France, accredited by Cofrac for tests on the equipment, a 200 kW photovoltaic power station in France and a 220 kW photovoltaic power station in Italy.

The expert touch

Certified quality products, continuous dialogue to understand customer requirements, maximum flexibility and dedication right by your side. Our experience at your service.

Essential know-how

Photovoltaic systems are a long-term investment. Different from each other in type and electrical parameters, each installation requires a detailed, complete analysis for proper sizing of the components necessary for conversion, distribution and management of photovoltaic energy.

The integration of photovoltaic solar energy production into an electrical energy system therefore requires specific expertise for maximum efficiency, safety and durability of the system.

Our know-how at your disposal

Trusting us with your project means you benefit from pre- and after-sales technical support, complete solutions specific to each type of photovoltaic architecture and which include protection and connection to both DC and AC voltages, DC/AC conversion and supervision of the production system.

ENERGY SPECIALIST SINCE 1922

The back-up of an expert

The design of a photovoltaic system requires expert knowledge of all the phases necessary for ensuring the system's safety. This objective may only be reached if the system's equipment components meet the different national standards and if the rules for usage are strictly observed. SOCOMEC has all the necessary expertise for the management of the entire project, from creation of the electrical architecture to supply of the products and their monitoring.

With you every step of the way

SOCOMEC's experts accompany you step by step in the installation and use of your system:

- assistance with the sizing of projects,
- assistance with installation,
- after-sales service,
- maintenance services.

Optimized efficiency

Maximum overall efficiency is the aim of every photovoltaic system and the inverter, which converts the continuous energy into alternating energy, is the most critical component.
SUNSYS inverters use the latest technology to guarantee maximum efficiency, even when weather conditions are not particularly favourable.


BODY 383 A

A complete solution

- PV production solutions for on-grid applications:
  - inverters for residential installations,
  - inverters for building installations,
  - inverters for big roofs and solar park installations,
  - solar power systems in shelter or container.
- PV production solutions for off-grid applications.
- Energy storage solutions for on-grid and off-grid applications.
- Protection solutions.
- Monitoring solutions.
- Service solutions.


BODY 338 A

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Well-designed systems

for optimum efficiency

The development of renewable energies is an essential step towards a sustainable energy policy.
A photovoltaic system is a long-term investment that can bring excellent returns, but safety and durability can only be guaranteed by specialist manufacturer.

Wider range of applications

Solar power has always been a natural and renewable alternative energy source. It just needs to be captured and then converted.
The different panel and conversion technologies currently available make it possible to choose the most suitable solutions for each application. Whatever the type of application – on-grid or off-grid – SOCOMEC provides the correct solution and efficient use of the components.

PV production for on-grid applications

An on-grid PV application (also known as a grid-tie application), is when the photovoltaic system is connected to the electrical grid. The installation is therefore dependent on the grid. When the PV array is producing power it is possible to:

- fully use the energy produced by the PV plant and buy any extra energy from the power utility,
- use the energy needed by the loads and sell any surplus energy to the power utility,
- sell all the energy produced by the PV plant to the power utility.

Depending on the power output of the PV plant, on-grid applications can be classified according to three main categories:

- residential installations, which produce a peak power level of 2 to 6 kWp, in the form of an alternating single-phase output voltage of 230 V. The set of photovoltaic panels installed on the roof can occupy a maximum surface of around 40 m^2.
- building applications: the photovoltaic systems can produce maximum peak power levels of hundreds of kWp. The photovoltaic panels are usually installed on roofs, terraces and the fronts of industrial buildings, shopping centres or public buildings, occupying a surface consisting of between tens and hundreds of square metres.
- solar park applications: built on areas covering thousands of square metres, solar parks are photovoltaic power stations that can produce a peak power capacity of several tens of MWp.
  The energy produced is injected into the electricity grid at medium and high voltage through a transformer unit. High-performance equipment is required to optimize the level of power injected into the network.


SITE 697 A

Energy storage for on-grid applications

An Energy storage system is used to maximize the yield of renewable energy installations such as PV plants. These systems are generally integrated into the existing renewable energy plant and usually have batteries to store unused renewable energy for use later, when needed.
They are also used as grid stabilizers.

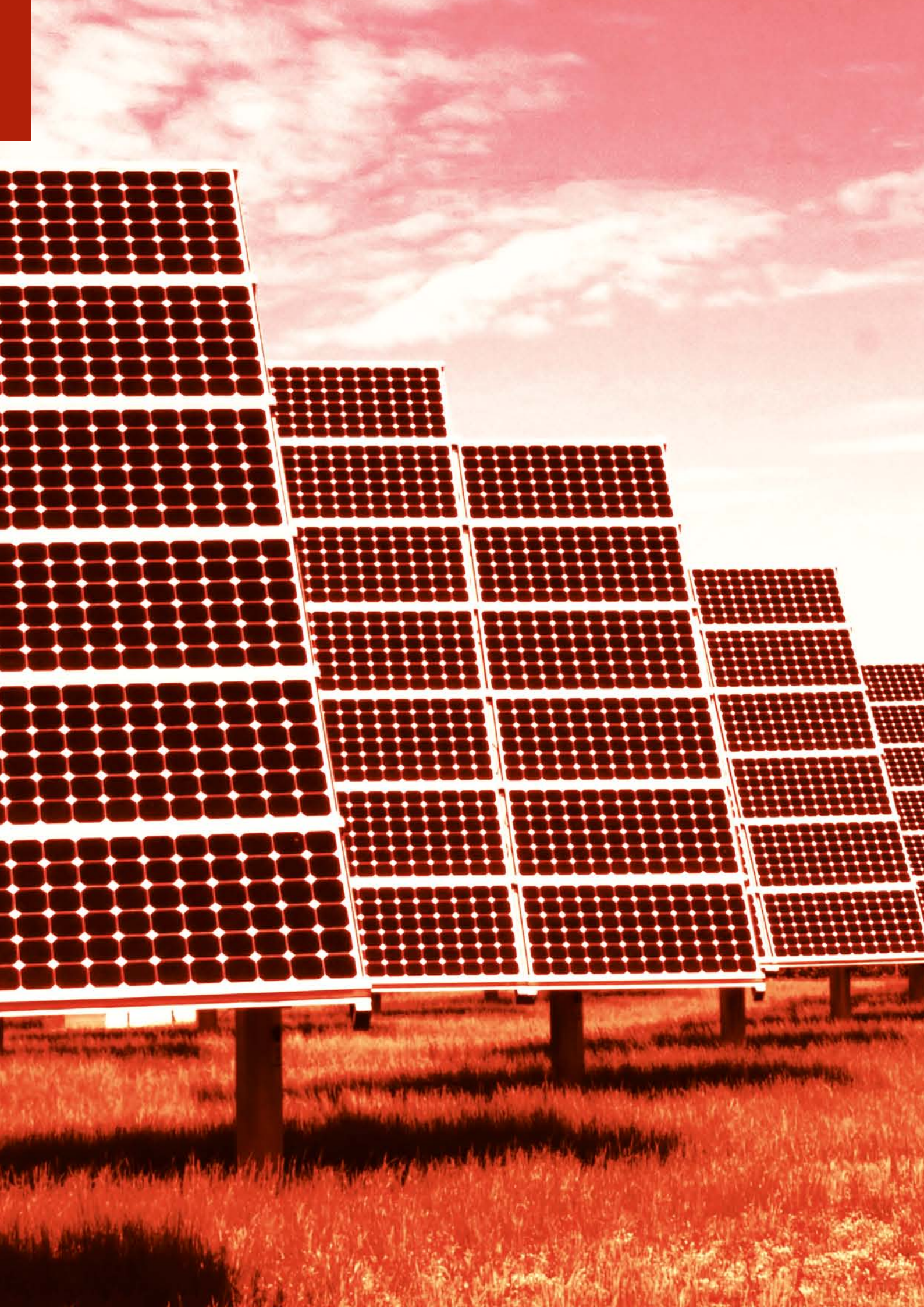

SITE 698 A

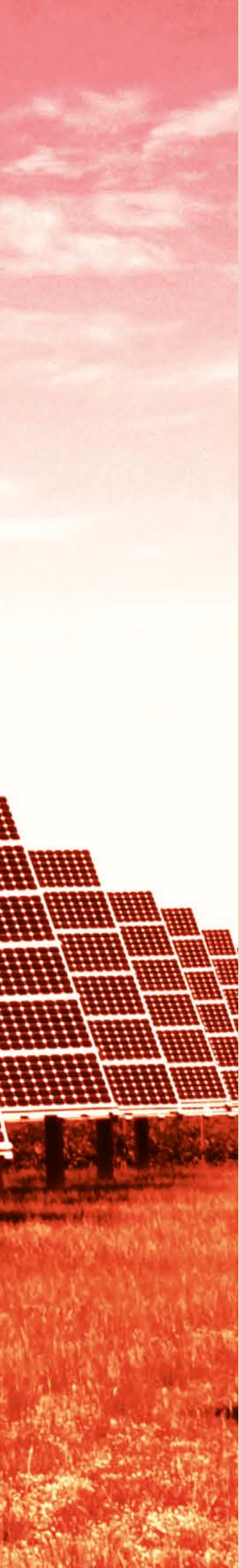
PV production and Energy storage for off-grid applications

Designed for all the areas not served by the public power grid or for locations connected to a disturbed public power grid, the energy produced by the photovoltaic system is used to feed the utilities and charge the batteries. When the PV array is not producing power the utilities are supplied by the batteries. When batteries are discharged, the energy is provided either by the grid or by a gen set.
The main off-grid applications are:

- remote locations not served by the public power grid supplied by diesel generators,
- locations connected to a disturbed public power grid,
- unelectrified areas.


SITE 694 A





PV production for on-grid applications

SOCOMEC on-grid solutions allow you to get the maximum overall efficiency out of every photovoltaic system, whether it is a residential application, a building application or a high power solar park.

Residential applications

- Power: up to 6 kW.
- Installation area and dimension: roof, 40 m² maximum.
- Peak power level: 2 to 6 kWp.
- Output: single-phase low voltage.
- Downstream of the panels the SOCOMEC solution covers DC protection and connection, DC/AC conversion, AC protection and connection and PV production monitoring.

Building applications

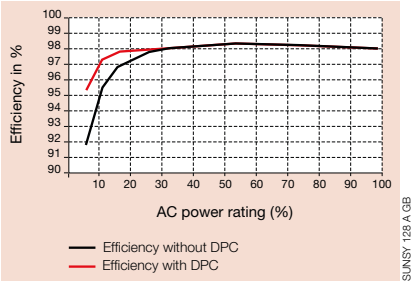
- Power: from 6 to 100 kW.
- Installation area and dimension: roofs, terraces and the fronts of industrial buildings, shopping centres or public buildings, tens to hundreds of square metres.
- Peak power level: hundreds of kWp.
- Output: three-phase low voltage.
- Downstream of the panels the SOCOMEC solution covers DC protection and connection, DC/AC conversion, AC protection and connection and PV production monitoring.

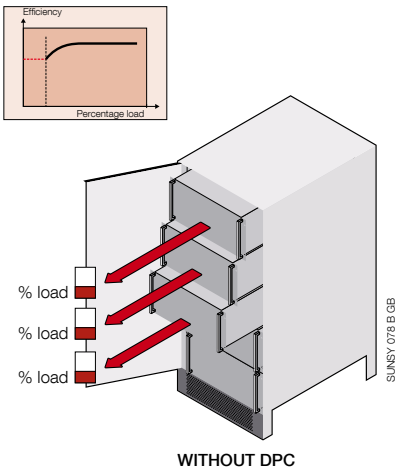
Solar park applications

- Power: higher than 100 kW.
- Installation area and dimension: fields, thousands of square metres.
- Peak power level: several tens of MWp.
- Output: three-phase low voltage; medium and high voltage injected into the grid through a transformer unit.
- Downstream of the panels the SOCOMEC solution covers DC protection and connection, DC/AC conversion, AC protection and connection and PV production monitoring.

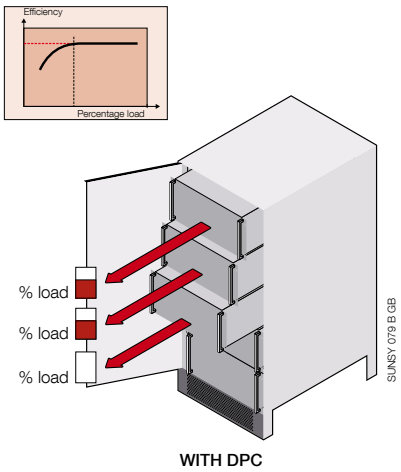
Dynamic Power Control

Considering the average annual sunlight levels observed in Europe, a typical photovoltaic plant mostly operates in conditions of reduced brightness. It is therefore essential that the inverter is efficient, despite any unfavourable weather conditions.





WITHOUT DPC



WITH DPC

Benefits of the "Dynamic Power Control" system

High efficiency

The DPC optimizes the efficiency of your plant, particularly for partial loads. The inverter starts to produce electricity at low levels of sunlight. The P100TL inverter is 96 % efficient with a load of only 5 %.

Increased lifetime

Thanks to the DPC, only the modules required for energy production are operational. In addition, use of the power modules is verified in a cyclical manner to share the load time. The operational duration of a module is thus optimized, increasing the useful life of the inverter.

Better availability

If one of the inverter power modules stops (due to a fault), the system will automatically reconfigure in order to use the remaining modules as optimally as possible, and to continue supplying the maximum possible amount of energy.

Thanks to its modular architecture and **DPC (Dynamic Power Control)** function, the SUNSYS inverter optimizes the efficiency of your plant.

Production from the inverter is very efficient, even at very low levels of sunlight.

Modular architecture optimizes overall efficiency by only using the power modules it requires. In cases of partial sunlight, fewer modules are used which operate with a greater load and, consequently, with greater efficiency.

Integrated Earthing Kit option

An option is available on both the positive and negative poles, which earths the solar modules in total safety, and permanently controls the status of the photovoltaic field, signalling any irregularities and maintaining the operating status of the entire plant.

Rack 33 kW

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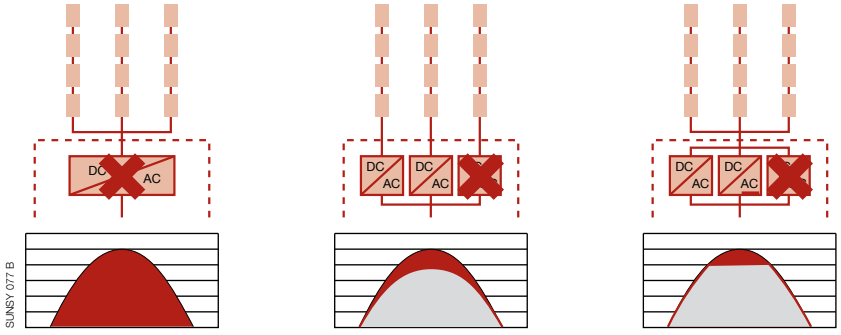
Benefits of the modular solution

When the centralized inverter is connected to one single tracker, there will be considerable loss in production in the event of a fault, which will be increased by the time needed for repair or replacement. When there is a greater number of modular inverters, each with 3 x 33 kW modules, the daily peak loss due to fault will only be related to one part of the plant.



Centralized architecture *Distributed architecture* *Modular architecture*

Different operating modes

Cyclic operation of modules

The modular architecture, combined with the DPC function that increases efficiency at low levels of sunlight, allows the cyclic operation of the inverter modules. In the morning, evening and whenever the inverter is not fully operational, the modules are activated according to their operation time. Those with fewer operating hours take precedence. In this way, it is possible to increase the useful life of each module and, consequently, that of the inverter, and reduce maintenance.

Redundant operation

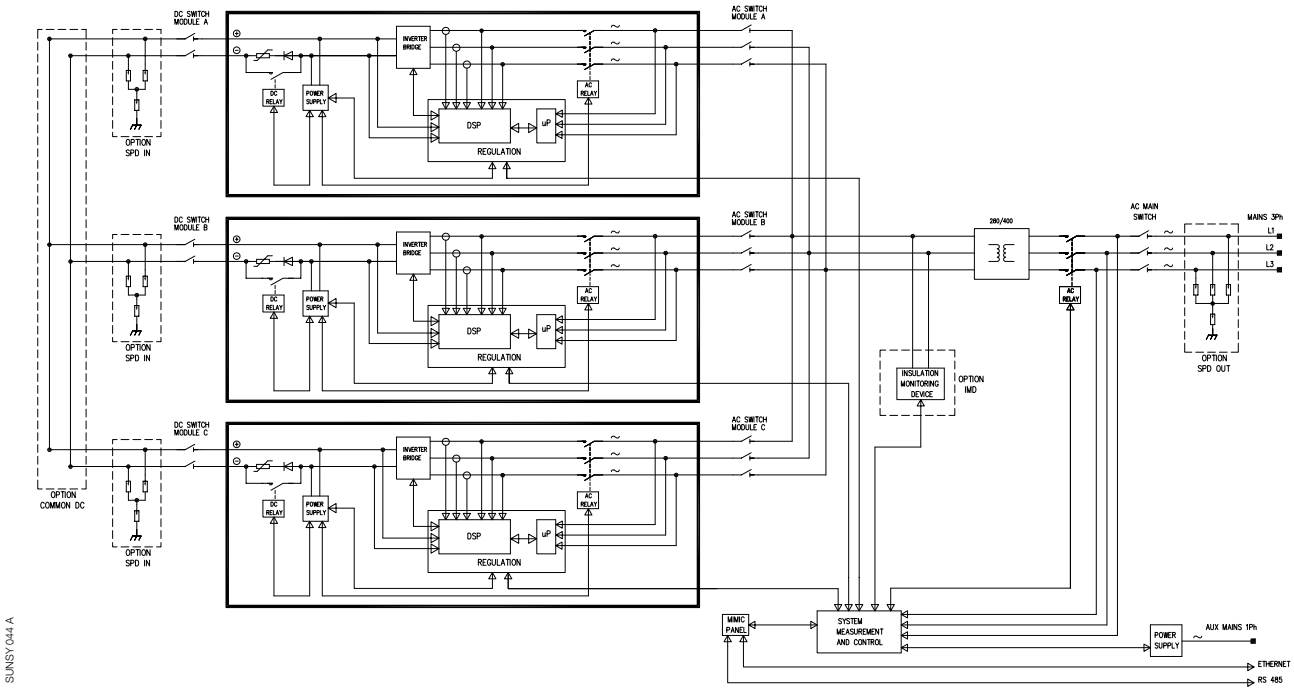
SUNSYS PARK inverters with the DPC mode activated (two or three shared inputs) divide the power from the field between the various inverter modules. If one module is faulty, the remaining modules can sustain the energy production to their maximum capacity, allowing the faulty module to be repaired and keeping energy loss to a minimum.

When only two modules are in operation, SUNSYS P100TL/P100TR inverters produce energy with sunlight up to 66 %, and up to 80 % per half hour, without any production loss.

Rapid repair

Hot-Swap power module. This module is is housed in a compact pull-out unit, allowing rapid extraction and replacement even while the inverter is in operation and the remaining modules are fully operational. Replacement is very quick and can even be carried out by non-Socomec qualified personnel (for example, by the contractor who built the plant). The modules can be stored as spares and used when required.

Example of the schematic diagram of the system (SUNSYS P100TR)



SUNSYS H30i/H30iD

3 kW

the innovative residential solution

The best, high-efficiency performance

- Ideal solution for residential photovoltaic installations with a power of 3 kW.
- The transformerless design offers an increased conversion efficiency.
- Light and robust, it is quick and easy to install in all operating conditions, ensuring:
  - DC protection and connection,
  - DC/AC conversion,
  - AC protection and connection,
  - monitoring of the photovoltaic system.

Benefits of the integrated solution

- Complete, integrated, safe solution which includes the protection and disconnection devices necessary for the system's operation.
- Extreme ease of installation and maintenance (easy to connect, easy to swap).
- Suitable for harsh environments (IP65).
- LCD control panel for simple and immediate monitoring of the system.
- Easy to use.

Communication and supervision

- LCD high-resolution display with a multilingual menu: English, French, German, Spanish and Italian (for other languages, contact SOCOMEC).
- Capacitive keyboard.
- Integrated data logger with data storage on MicroSD Card.
- RS485 communication ports.
- WiFi connection (optional) with integrated web server.
- Software update through USB stick.

The solution for

> Installations in medium-sized residential buildings
> Installations in all types of environmental conditions

Certifications

The ***SUNSYS Hi*** solution is TÜV SÜD certified for product safety (EN 62109, EN 61439).

Advantages

97% MAXIMUM EFFICIENCY

WARRANTY 5 YEARS

Related products

> Supervision, page 63

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Technical data

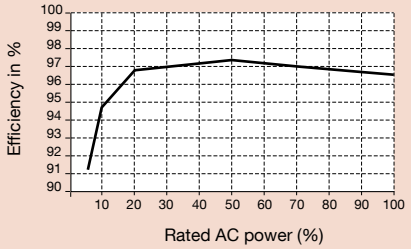
INPUT (DC)	
Maximum PV power (STC module conditions)	3600 W
Rated voltage	360 VDC
Maximum voltage	630 VDC
Voltage range	150 to 600 VDC
MPPT voltage range	260 to 500 VDC
Start-up voltage	210 VDC
Number of independent MPPTs	1
Pairs of input connectors for MPPTs	1
Maximum input current	12 A
Maximum short-circuit current	13 A
OUTPUT (AC)	
Power rating	3000 W
Maximum power	3300 W (30 min)
Apparent power rating	3000 VA
Maximum apparent power	3300 VA (30 min)
Rated voltage	230 Vrms(1) 1ph + N
Voltage range	184 to 276 Vrms(1) 1ph + N
Rated frequency	50 Hz(1)
Frequency range	47.5 to 51.5 Hz(1)
Rated current	13 Arms
Maximum current	16 Arms
Total harmonic distortion of current	< 5 %
Power factor range	0.9 to 1(2)
Topology	No transformer
LEVEL OF EFFICIENCY	
Maximum efficiency	97,10 %
EU efficiency	96,70 %
Consumption at night	1 W
Maximum dissipated power	100 W
Maximum dissipated power	340 BTU/h
Maximum dissipated power	86 kCal/h
GENERAL DATA	
Protection class (according to EN 62109)	Class I
Overvoltage category (according to EN 62109)	Class III
Environmental category (according to EN 62109)	External
Environmental degree of protection (according to EN 62109)	IP 65
Type of DC connectors	Sunclix (included)
Type of AC connector	Bayonet connector (included)
Operating temperature	-20 to +60 °C
Rated temperature	-20 to +40 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 % to 95 % without condensation
Cooling system	Natural convection
Sound emission	< 36 dB 1 m from inverter
Altitude	0 to 2000 m
Dimensions (L x D x H)	350 x 205 x 1130 mm
Weight	29.5 kg
Certification and applicable standards	CEI 0-21, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1
Warranty	5 years (standard), 10/15/20 years (optional extension)

(1) The accepted tolerance depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

Technical data

PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	•
Output surge protection devices	•
Input switch (DC)	•
Output switch (AC)	•
Output magnetothermal switch	•
Output selective differential protection	Option
COMMUNICATION	
RS485 interface	•
WiFi interface	Option
Digital inputs/Dry contact outputs	•
MicroSD slot	•
USB port	•
Control panel	Graphic LCD with backlight

Efficiency curve



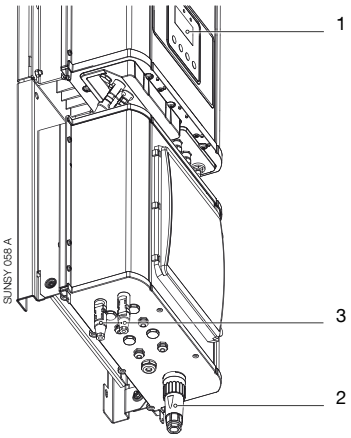
SUNSY 027 C GB

SUNSYS H30i/H30iD

3 kW

Single-phase inverters

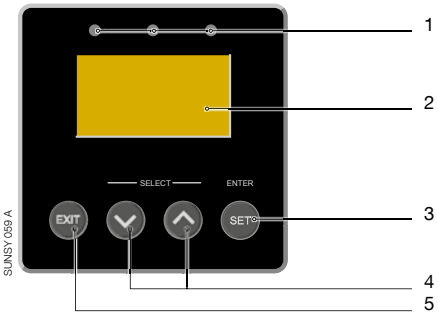
Connections



1. LCD Control panel
2. AC Output
3. DC Input

Assembly

Control panel

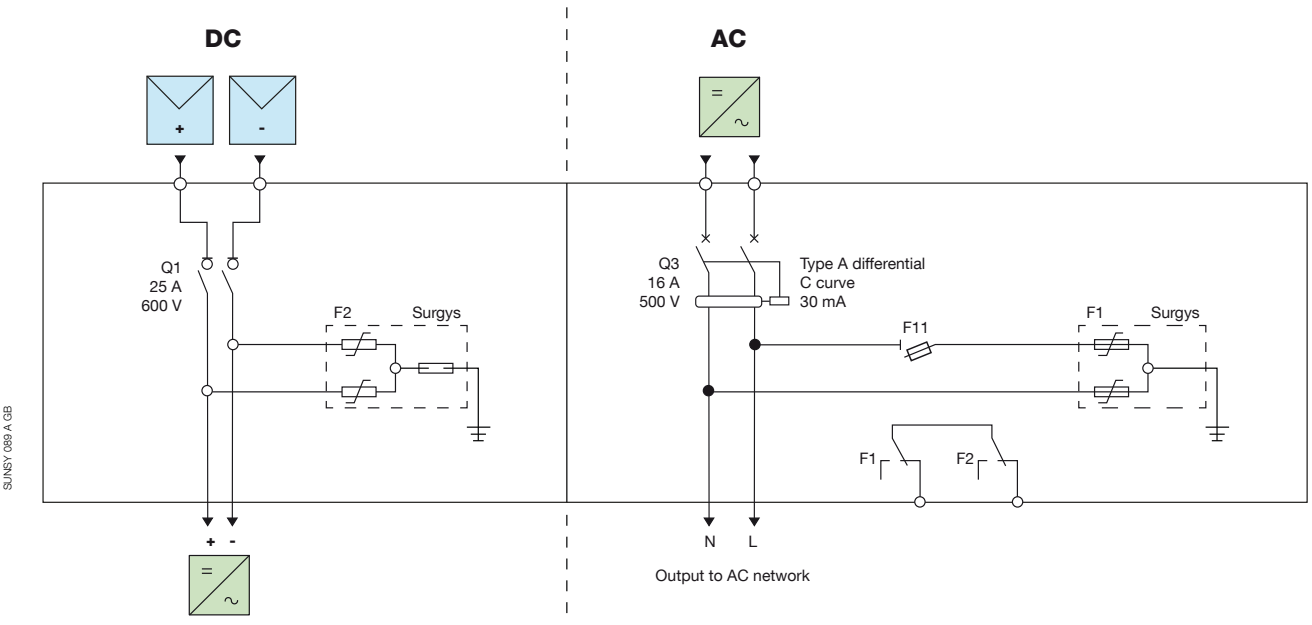


1. LED
2. LCD Display
3. ENTER/SET button
4. Selection buttons
4. EXIT button

Protection and isolation

UPSTREAM AND DOWNSTREAM PROTECTION OF THE INVERTER		AC PROTECTION	DC PROTECTION
SIRCO MC PV Isolator switch		-	•
SURGYS PV overvoltage protection		•	•
Differential magnetothermal switch(1)		•	-

(1) Option for SUNSYS H30i, standard for SUNSYS H30iD.



N.B.: the differential paired with the Q3 button is optional

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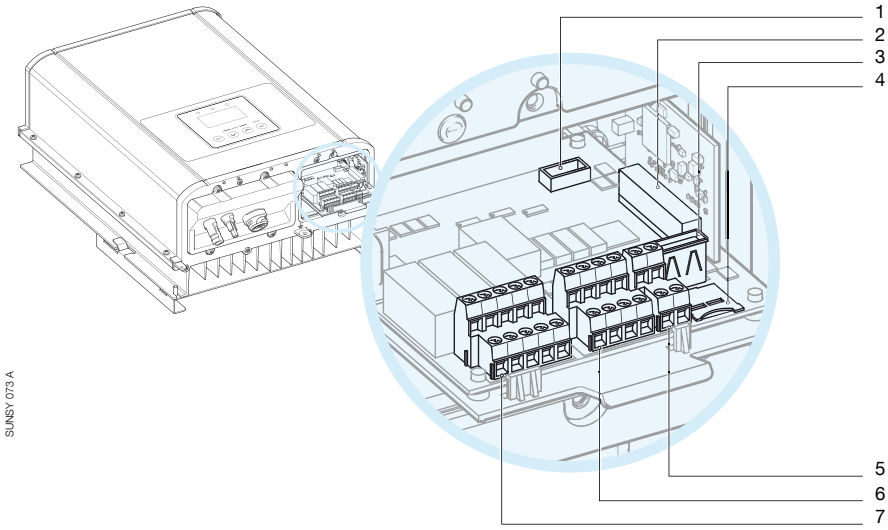
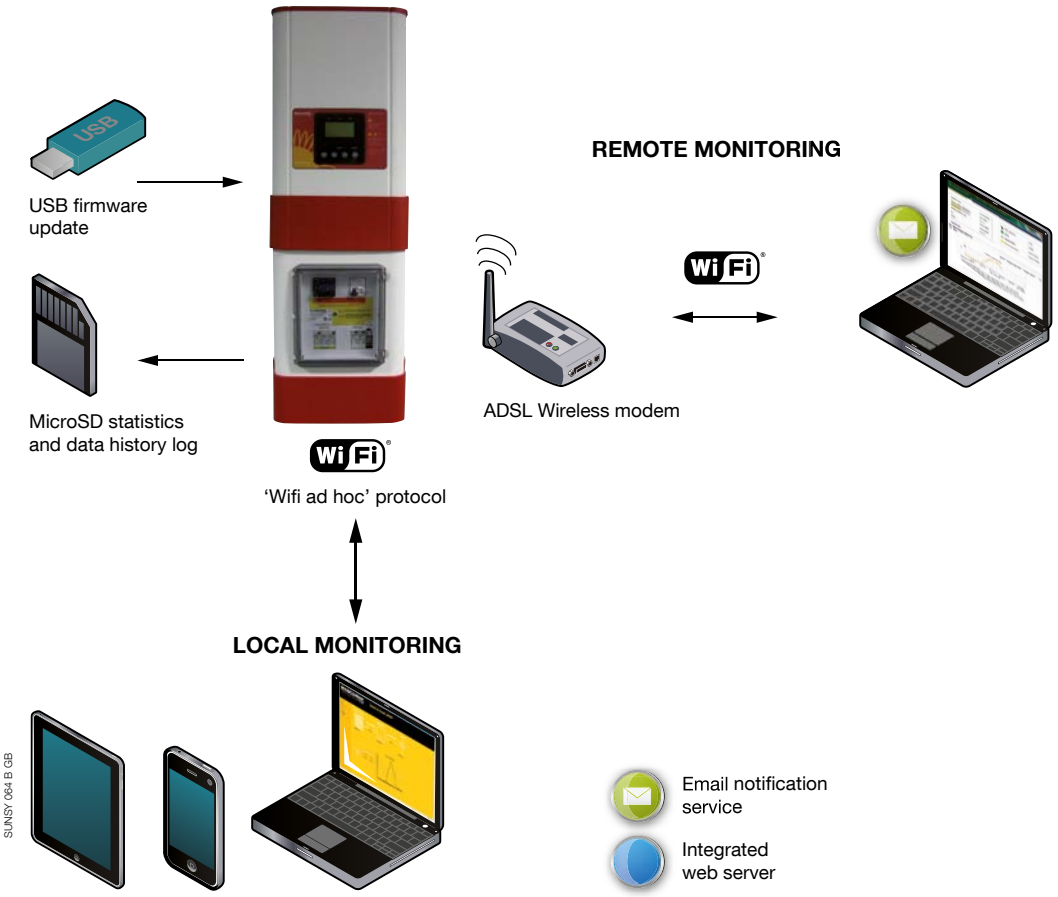
Diagram of communication ports



1. RS-232 Interface
2. WiFi connection (optional)
3. USB port
4. MicroSD card
5. RS485 communication port
6. Digital inputs
7. Dry contacts

Communication



SUNSYS H30

3 kW

The innovative residential solution

new

The best, high-efficiency performance

- Ideal solution for residential photovoltaic installations with a power of 3 kW.
- The transformerless design offers an increased conversion efficiency.
- Light and robust, it is quick and easy to install in all operating conditions.
- Extreme ease of installation and maintenance (easy to connect, easy to swap).
- Suitable for harsh environments (IP65).
- LCD control panel for simple and immediate monitoring of the system.
- Easy to use.

Communication and supervision

- LCD high-resolution display with a multilingual menu: English, French, German, Spanish and Italian (for other languages, contact SOCOMEC).
- Capacitive keyboard.
- Integrated data logger with data storage on MicroSD Card.
- RS485 communication ports.
- WiFi connection (optional) with integrated web server.
- Software update through USB stick.

The solution for

> Installations in medium-sized residential buildings
> Installations in all types of environmental conditions

Certifications

The *SUNSYS H* solution is TÜV SÜD certified for product safety (EN 62109, EN 61439).

MADE IN EUROPE

Advantages

97% MAXIMUM EFFICIENCY

WARRANTY 5 YEARS

Related products

> Supervision, page 63

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Technical data

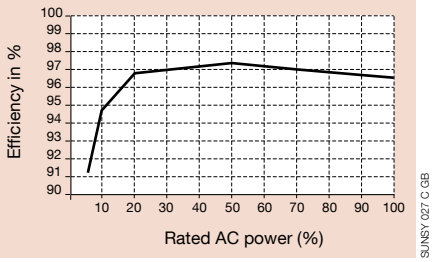
INPUT (DC)	
Maximum PV power (STC module conditions)	3600 W
Rated voltage	360 VDC
Maximum voltage	630 VDC
Voltage range	150 to 600 VDC
MPPT voltage range	260 to 500 VDC
Start-up voltage	210 VDC
Number of independent MPPTs	1
Pairs of input connectors for MPPTs	1
Maximum input current	12 A
Maximum short-circuit current	13 A
OUTPUT (AC)	
Power rating	3000 W
Maximum power	3300 W (30 min)
Apparent power rating	3000 VA
Maximum apparent power	3300 VA (30 min)
Rated voltage	230 Vrms(1) 1ph + N
Voltage range	184 to 276 Vrms(1) 1ph + N
Rated frequency	50 Hz(1)
Frequency range	47.5 to 51.5 Hz(1)
Rated current	13 Arms
Maximum current	16 Arms
Total harmonic distortion of current	< 5 %
Power factor range	0.9 to 1(2)
Topology	No transformer
LEVEL OF EFFICIENCY	
Maximum efficiency	97,10 %
EU efficiency	96,70 %
Consumption at night	1 W
Maximum dissipated power	100 W
Maximum dissipated power	340 BTU / h
Maximum dissipated power	86 kCal / h
GENERAL DATA	
Protection class (according to EN 62109)	Class I
Overvoltage category (according to EN 62109)	Class III
Environmental category (according to EN 62109)	External
Environmental degree of protection (according to EN 62109)	IP 65
Type of DC connectors	Sunclix (included)
Type of AC connector	Bayonet connector (included)
Operating temperature	-20 to +60 °C
Rated temperature	-20 to +40 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 % to 95 % without condensation
Cooling system	Natural convection
Sound emission	< 36 dB 1 m from inverter
Altitude	0 to 2000 m
Dimensions (L x D x H)	350 x 205 x 569 mm
Weight	16 kg
Certification and applicable standards	CEI 0-21, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1
Warranty	5 years (standard), 10 / 15 / 20 years (optional extension)

(1) The accepted tolerance depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

Technical data

PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	-
Output surge protection devices	-
Input switch (DC)	-
Output switch (AC)	-
Output magnetothermal switch	-
Output selective differential protection	-
COMMUNICATION	
RS485 interface	•
WiFi interface	Option
Digital inputs / Dry contact outputs	•
MicroSD slot	•
USB port	•
Control panel	Graphic LCD with backlight

Efficiency curve



SUNSY 027 C GB

SUNSYS H50

5 kW

Increased power density

The solution for

- Installations in medium-sized residential buildings
- Installations in all types of environmental conditions

Advantages

Related products

- RJB photovoltaic enclosures, page 50

- Supervision, page 63

The best, high-efficiency performance

- The SUNSYS H50 inverter is the ideal solution for residential photovoltaic applications with a power of 5 kW.
- The transformerless design offers a conversion efficiency which is amongst the best on the market.
- MPPT's broad voltage tolerance allows for excellent flexibility in combination with photovoltaic modules.

Benefits of the SUNSYS H50 solution

- The IP65 degree of protection makes it suitable for installation in both indoor and outdoor environments.
- Compact inverter with increased energy efficiency and increased power density.

Communication and supervision

- Equipped with LCD control panel with a multilingual menu: English, French, German, Spanish and Italian (for other languages, contact SOCOMEC).
- Optional RS485 connection for simple and immediate monitoring of the system.
- User-friendly.

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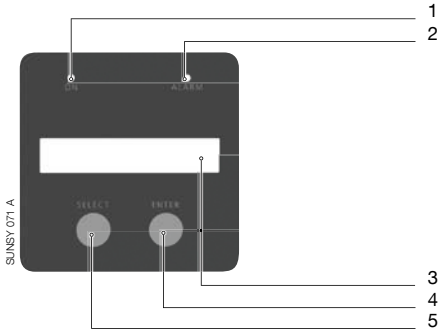
Innovative Power Solutions

Technical data

	SUNSYS H50
INPUT (DC)	
Maximum PV power (STC module conditions)	5500 W
Rated voltage	650 VDC
Maximum voltage	1000 VDC
Voltage range	200 to 1000 VDC
MPPT voltage range	310 to 820 VDC
Start-up voltage	250 VDC
Number of independent MPPTs	1
Pairs of input connectors for MPPTs	2
Maximum input current	17 A
Maximum short-circuit current	19 A
OUTPUT (AC)	
Power rating	5000 W
Maximum power	5250 W
Apparent power rating	5000 VA
Maximum apparent power	5250 VA
Rated voltage	230 Vrms(1) 1ph + N
Voltage range	184 to 265 Vrms(1) 1ph + N
Rated frequency	50 Hz(1)
Frequency range	47.5 to 51.5 Hz(1)
Rated current	22 Arms
Maximum current	25 Arms
Total harmonic distortion of current	< 3 %
Power factor range	0.8 to 1(2)
Topology	No transformer
LEVEL OF EFFICIENCY	
Maximum efficiency	97,80 %
EU efficiency	97,20 %
Consumption at night	1 W
Maximum dissipated power	140 W
Maximum dissipated power	470 BTU / h
Maximum dissipated power	120 kCal / h
GENERAL DATA	
Protection class (according to EN 62109)	Class I
Overvoltage category (according to EN 62109)	Class III
Environmental category (according to EN 62109)	External
Environmental degree of protection (according to EN 62109)	IP 65
Type of DC connectors	MC4
Type of AC connector	Bayonet connector (included)
Operating temperature	-20 to +60 °C
Rated temperature	-20 to +40 °C
Storage temperature	-25 to +60 °C
Relative humidity	5 % to 95 % without condensation
Cooling system	Natural convection
Sound emission	< 36 dB 1 m from inverter
Altitude	0 to 2000 m
Dimensions (L x D x H)	470 x 167 x 482 mm
Weight	24 kg
Certification and applicable standards	CEI 0-21, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1
Warranty	5 years (standard), 10 / 15 / 20 years (optional extension)

(1) The accepted tolerance depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

Control panel

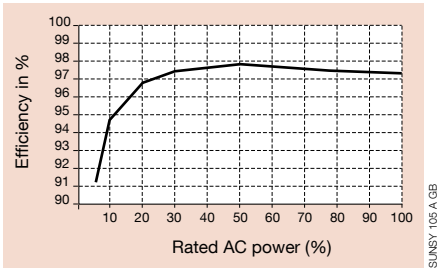


1. Green LED
2. Red LED
3. LCD Display
4. ENTER: menu or enter selection
5. SELECT: page selection

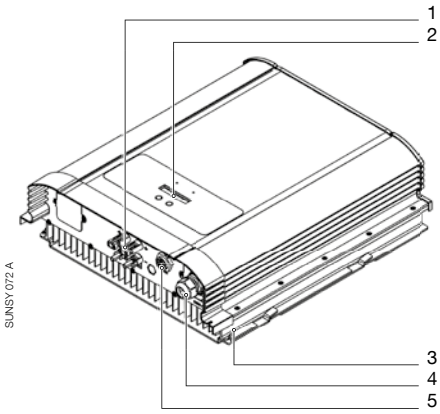
Technical data

	SUNSYS H50
PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	-
Output surge protection devices	-
Input switch	-
Output switch	-
Output magnetothermal switch	-
Output selective differential protection	-
COMMUNICATION	
RS485 interface	•
WiFi interface	-
Digital inputs / Dry contact outputs	-
MicroSD slot	-
USB port	-
Control panel	Graphic LCD with backlight

Efficiency curve



Connections



1. DC connectors
2. Display, buttons, LED
3. Earth connection (PE)
4. Communication connection
5. AC connector

SUNSYS H30+30i/H30+30iD

6 kW

The innovative residential solution

The best, high-efficiency performance

- Ideal solution for residential photovoltaic installations with a power of 6 kW.
- The transformerless design offers an increased conversion efficiency.
- Light and robust, it is quick and easy to install in all operating conditions, ensuring:
  - DC protection and connection,
  - DC/AC conversion,
  - AC protection and connection,
  - monitoring of the photovoltaic system.

Benefits of the integrated solution

- Complete, integrated, safe solution which includes the protection and disconnection devices necessary for the system's operation.
- Extreme ease of installation and maintenance (easy to connect, easy to swap).
- Suitable for harsh environments (IP65).
- LCD control panel for simple and immediate monitoring of the system.
- Easy to use.

Communication and supervision

- LCD high-resolution display with a multilingual menu: English, French, German, Spanish and Italian (for other languages, contact SOCOMEC).
- Capacitive keyboard.
- Integrated data logger with data storage on MicroSD Card.
- RS485 communication ports.
- WiFi connection (optional) with integrated web server.
- Software update through USB stick.

The solution for

> Installations in medium-sized residential buildings
> Installations in all types of environmental conditions

Certifications

The *SUNSYS H* solution is TÜV SÜD certified for product safety (EN 62109, EN 61439).

MADE IN EUROPE

Advantages

97% MAXIMUM EFFICIENCY

WARRANTY 5 YEARS

Related products

> Supervision, page 63

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Technical data

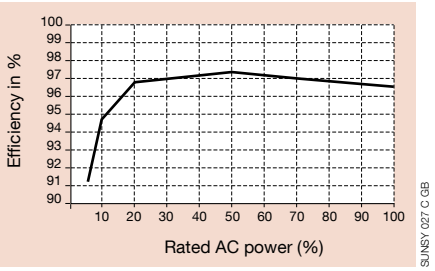
INPUT (DC)	
Maximum PV power (STC module conditions)	2 x 3600 W
Rated voltage	360 VDC
Maximum voltage	630 VDC
Voltage range	150 to 600 VDC
MPPT voltage range	260 to 500 VDC
Start-up voltage	210 VDC
Number of independent MPPTs	2
Pairs of input connectors for MPPTs	1
Maximum input current	12 A x2
Maximum short-circuit current	13 A x2
OUTPUT (AC)	
Power rating	6000 W
Maximum power	6600 W (30 min)
Apparent power rating	6000 VA
Maximum apparent power	6600 VA (30 min)
Rated voltage	230 Vrms(1) 1ph + N
Voltage range	184 to 276 Vrms(1) 1ph + N
Rated frequency	50 Hz(1)
Frequency range	47.5 to 51.5 Hz(1)
Rated current	26 Arms
Maximum current	32 Arms
Total harmonic distortion of current	< 5 %
Power factor range	0.9 to 1(2)
Topology	No transformer
LEVEL OF EFFICIENCY	
Maximum efficiency	97,10 %
EU efficiency	96,70 %
Consumption at night	2 W
Maximum dissipated power	200 W
Maximum dissipated power	680 BTU / h
Maximum dissipated power	172 kCal / h
GENERAL DATA	
Protection class (according to EN 62109)	Class I
Overvoltage category (according to EN 62109)	Class III
Environmental category (according to EN 62109)	External
Environmental degree of protection (according to EN 62109)	IP 65
Type of DC connectors	Sunclix (included)
Type of AC connector	Bayonet connector (included)
Operating temperature	-20 to +60 °C
Rated temperature	-20 to +40 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 % to 95 % without condensation
Cooling system	Natural convection
Sound emission	< 36 dB 1 m from inverter
Altitude	0 to 2000 m
Inverter + ECB dimensions (L x D x H)	350 x 205 x 1130 mm
Inverter + ECB weight	29.5 kg
Inverter dimensions (L x D x H)	350 x 205 x 569 mm
Inverter weight	16 kg
ECB dimensions (L x D x H)	350 x 205 x 450 mm
ECB weight	13.5 kg
Certification and applicable standards	CEI 0-21, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1
Warranty	5 years (standard), 10 / 15 / 20 years (optional extension)

(1) The accepted tolerance depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

Technical data

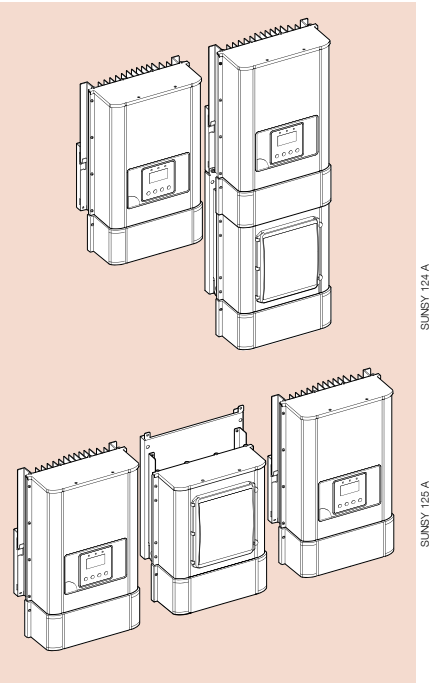
PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	•
Output surge protection devices	•
Input switch (DC)	•
Output switch (AC)	•
Output magnetothermal switch	•
Output selective differential protection	Option
COMMUNICATION	
RS485 interface	•
WiFi interface	Option
Digital inputs / Dry contact outputs	•
MicroSD slot	•
USB port	•
Control panel	Graphic LCD with backlight

Efficiency curve



SUNSY 027 C GB

Installation



SUNSY 124 A

SUNSY 125 A

SUNSYS B12/B15

12 and 15 kW

Increased flexibility of use

SUNSYS B12

SUNSYS B15

Benefits of the SUNSYS B12/B15 solution

- MPPT's broad voltage tolerance provides excellent flexibility in combination with photovoltaic modules.
- The IP65 degree of protection makes it suitable for installation in both indoor and outdoor environments.

The best, high-efficiency performance

- Ideal solution for photovoltaic applications on buildings.
- The transformerless design offers a conversion efficiency which is amongst the best on the market.
- The double tracker series input provides:
  - optimization of the system's energy production,
  - maximisation of the output of extended roof systems with several layers, systems with different orientations, systems with areas of shade,
  - management of a system divided into sections with different photovoltaic module technologies with a single inverter.

Communication and supervision

- High-resolution LCD display with a multilingual menu: English, French, German, Spanish and Italian (for other languages, contact SOCOMEC).
- Equipped with graphic LCD control panel with a datalogger and RS485 connection for simple and immediate monitoring of the system.

The solution for

- Installations in medium-sized and large commercial buildings
- Installations in all types of environmental conditions

Advantages

Related products

- BJB photovoltaic enclosures, page 52

- Supervision, page 63

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Technical data

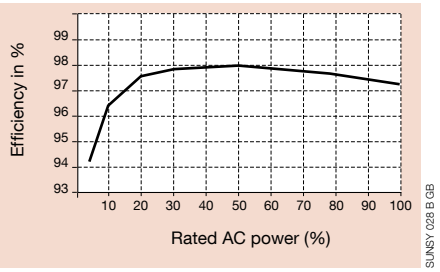
	SUNSYS B12	SUNSYS B15
INPUT (DC)		
Maximum PV power (STC module conditions)	13200 W	16500 W
Rated voltage	650 VDC	
Maximum voltage	1000 VDC	
Voltage range	200 to 1000 VDC	
MPPT voltage range	420 to 850 VDC	350 to 800 VDC
Start-up voltage	250 VDC	
Number of independent MPPTs	2	
Pairs of input connectors for MPPTs	2	
Maximum input current	20 A x2	23 A x2
Maximum short-circuit current	22 A x2	25 A x2
OUTPUT (AC)		
Power rating	12000 W	15000 W
Maximum power	12600 W	15750 W
Apparent power rating	12000 VA	15000 W
Maximum apparent power	12600 VA	15750 W
Rated voltage	400 Vrms(1) 3ph + N	
Voltage range	320 to 480 Vrms(1) 3ph + N	
Rated frequency	50 Hz(1)	
Frequency range	47.5 to 51.5 Hz(1)	
Rated current	17.4 Arms	22 Arms
Maximum current	19.2 Arms	25 Arms
Total harmonic distortion of current	< 3 %	
Power factor range	0.8 to 1(2)	
Topology	No transformer	
LEVEL OF EFFICIENCY		
Maximum efficiency	98.10 %	
EU efficiency	97.5 %	
Consumption at night	2 W	
Maximum air demand	80 m³/h	
Maximum dissipated power	300 W	360 W
Maximum dissipated power	1025 BTU/h	1230 BTU/h
Maximum dissipated power	260 kCal/h	310 kCal/h
GENERAL DATA		
Protection class (according to EN 62109)	Class I	
Overvoltage category (according to EN 62109)	Class III	
Environmental category (according to EN 62109)	External	
Environmental degree of protection (according to EN 62109)	IP 65	
Type of DC connectors	MC4	
Type of AC connector	Bayonet connector (included)	
Operating temperature	-20 to +60 °C	
Rated temperature	-20 to +40 °C	
Storage temperature	-25 to +60 °C	
Relative humidity	5 % to 95 % without condensation	
Cooling system	Smart cooling	
Sound emission	< 50 dB 1 m from inverter	< 55 dB 1 m from inverter
Altitude	0 to 2000 m	
Dimensions (L x D x H)	606 x 289 x 609 mm	612 x 278 x 960 mm
Weight	41 kg	67 kg
Certification and applicable standards	CEI 0-21, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1	
Warranty	5 years (standard), 10/15/20 years (optional extension)	

(1) The accepted tolerance depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

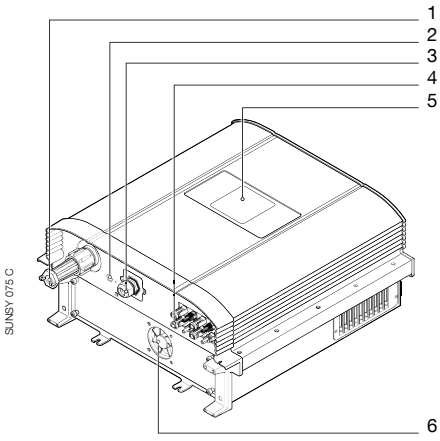
Technical data

	SUNSYS B12/B15
PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	-
Output surge protection devices	-
Input switch	-
Output switch	-
Output magnetothermal switch	-
Output selective differential protection	-
COMMUNICATION	
RS485 interface	•
WiFi interface	-
Digital inputs/Dry contact outputs	•
MicroSD slot	-
USB port	-
Control panel	Graphic LCD with backlight

Efficiency curve

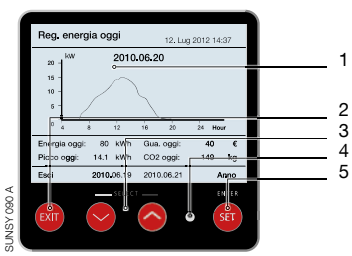


Connections



1. AC connector
2. Earth connection (PE)
3. Communication interface
4. DC connectors
5. LCD Control panel
6. Fans

Control panel



1. LCD Display
2. EXIT button
3. Selection buttons
4. LED
5. ENTER/SET button

SUNSYS B20E

20 kW

Increased flexibility of use

new

Benefits of the SUNSYS B20 solution

- MPPT's broad voltage tolerance provides excellent flexibility in combination with photovoltaic modules.
- The IP65 degree of protection makes it suitable for installation in both indoor and outdoor environments.

The best, high-efficiency performance

- Ideal solution for photovoltaic applications on buildings.
- The transformerless design offers a conversion efficiency which is amongst the best on the market.
- The double tracker series input provides:
  - optimization of the system's energy production,
  - maximisation of the output of extended roof systems with several layers, systems with different orientations, systems with areas of shade,
  - management of a system divided into sections with different photovoltaic module technologies with a single inverter.

Communication and supervision

- High-resolution LCD display with a multilingual menu: English, French, German, Spanish and Italian (for other languages, contact SOCOMEC).
- Equipped with graphic LCD control panel with a datalogger and RS485 connection for simple and immediate monitoring of the system.

The solution for

> Installations in medium-sized and large commercial buildings

> Installations in all types of environmental conditions

Advantages

98.3% MAXIMUM EFFICIENCY

WARRANTY 5 YEARS

Related products

> BJB photovoltaic enclosures, page 52

> Supervision, page 63

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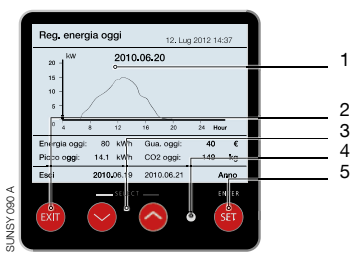
Technical data

	SUNSYS B20E
INPUT (DC)	
Maximum PV power (STC module conditions)	22000 W
Rated voltage	635 VDC
Maximum voltage	1000 VDC
Voltage range	200 to 1000 VDC
MPPT voltage range	470 to 820 VDC
Start-up voltage	250 VDC
Number of independent MPPTs	2
Pairs of input connectors for MPPTs	2
Maximum input current	22 A x2
Maximum short-circuit current	25 A x2
OUTPUT (AC)	
Power rating	20000 W
Maximum power	21000 W
Apparent power rating	20000 VA
Maximum apparent power	21000 VA
Rated voltage	400 Vrms(1) 3ph + N
Voltage range	160 to 480 Vrms(1) 3ph + N
Rated frequency	50 Hz(1)
Frequency range	47.5 to 51.5 Hz(1)
Rated current	29 Arms
Maximum current	32 Arms
Total harmonic distortion of current	< 3 %
Power factor range	0.8 to 1(2)
Topology	No transformer
LEVEL OF EFFICIENCY	
Maximum efficiency	98.30 %
EU efficiency	98.00 %
Consumption at night	2 W
Maximum air demand	320 m³/h
Maximum dissipated power	480 W
Maximum dissipated power	1620 BTU/h
Maximum dissipated power	410 kCal/h
GENERAL DATA	
Protection class (according to EN 62109)	Class I
Overvoltage category (according to EN 62109)	Class III
Environmental category (according to EN 62109)	External
Environmental degree of protection (according to EN 62109)	IP 65
Type of DC connectors	MC4
Type of AC connector	Bayonet connector (included)
Operating temperature	-20 to +60 °C
Rated temperature	-20 to +40 °C
Storage temperature	-25 to +60 °C
Relative humidity	5 % to 95 % without condensation
Cooling system	Smart cooling
Sound emission	< 55 dB 1 m from inverter
Altitude	0 to 2000 m
Dimensions (L x D x H)	625 x 278 x 612 mm
Weight	43.5 kg
Certification and applicable standards	CEI 0-21, CEI 0-16, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1
Warranty	5 years (standard), 10/15/20 years (optional extension)

(1) The accepted tolerance depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

Control panel



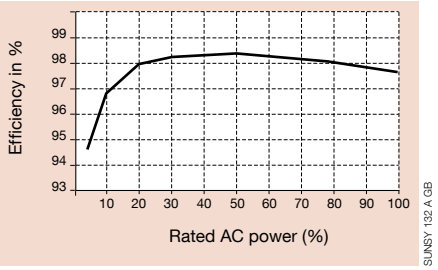
SUNSY 090 A

1. LCD Display
2. EXIT button
3. Selection buttons
4. LED
5. ENTER/SET button

Technical data

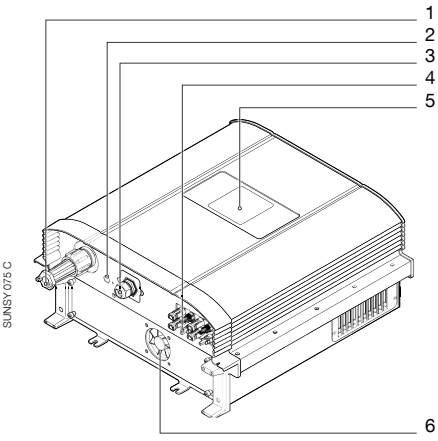
	SUNSYS B20E
PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	-
Output surge protection devices	-
Input switch	-
Output switch	-
Output magnetothermal switch	-
Output selective differential protection	-
COMMUNICATION	
RS485 interface	•
WiFi interface	-
Digital inputs/Dry contact outputs	•
MicroSD slot	-
USB port	-
Control panel	Graphic LCD with backlight

Efficiency curve



SUNSY 132 A GB

Connections



SUNSY 075 C

1. AC connector
2. Earth connection (PE)
3. Communication interface
4. DC connectors
5. LCD Control panel
6. Fans

SUNSYS B30

30 kW

Increased flexibility of use

The solution for

- Installations in medium-sized and large commercial buildings
- Installations in all types of environmental conditions

Advantages

98.3% MAXIMUM EFFICIENCY

WARRANTY 5 YEARS

Related products

- BJB photovoltaic enclosures, page 52

- Supervision, page 63

Benefits of the SUNSYS B30 solution

- MPPT's broad voltage tolerance provides excellent flexibility in combination with photovoltaic modules.
- The IP65 degree of protection makes it suitable for installation in both indoor and outdoor environments.

The best, high-efficiency performance

- Ideal solution for photovoltaic applications on buildings.
- The transformerless design offers a conversion efficiency which is amongst the best on the market.
- The double tracker series input provides:
  - optimization of the system's energy production,
  - maximisation of the output of extended roof systems with several layers, systems with different orientations, systems with areas of shade,
  - management of a system divided into sections with different photovoltaic module technologies with a single inverter.

Communication and supervision

- High-resolution LCD display with a multilingual menu: English, French, German, Spanish and Italian (for other languages, contact SOCOMEC).
- Equipped with graphic LCD control panel with a datalogger and RS485 connection for simple and immediate monitoring of the system.

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Technical data

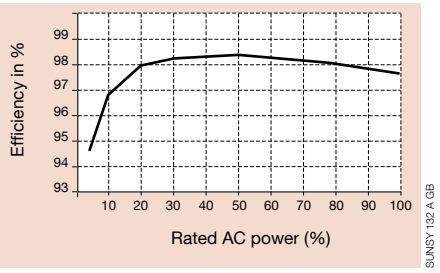
	SUNSYS B30
INPUT (DC)	
Maximum PV power (STC module conditions)	33000 W
Rated voltage	650 VDC
Maximum voltage	1000 VDC
Voltage range	200 to 1000 VDC
MPPT voltage range	480 to 800 VDC
Start-up voltage	250 VDC
Number of independent MPPTs	2
Pairs of input connectors for MPPTs	3
Maximum input current	34 A x2
Maximum short-circuit current	37 A x2
OUTPUT (AC)	
Power rating	30000 W
Maximum power	30000 W
Apparent power rating	30000 VA
Maximum apparent power	30000 VA
Rated voltage	400 Vrms(1) 3ph + N
Voltage range	320 to 480 Vrms(1) 3ph + N
Rated frequency	50 Hz(1)
Frequency range	47.5 to 51.5 Hz(1)
Rated current	43 Arms
Maximum current	46 Arms
Total harmonic distortion of current	< 3 %
Power factor range	0.8 to 1(2)
Topology	No transformer
LEVEL OF EFFICIENCY	
Maximum efficiency	98.3 %
EU efficiency	98.0 %
Consumption at night	2 W
Maximum air demand	320 m³/h
Maximum dissipated power	720 W
Maximum dissipated power	2460 BTU/h
Maximum dissipated power	620 kCal/h
GENERAL DATA	
Protection class (according to EN 62109)	Class I
Overvoltage category (according to EN 62109)	Class III
Environmental category (according to EN 62109)	External
Environmental degree of protection (according to EN 62109)	IP 65
Type of DC connectors	MC4
Type of AC connector	Bayonet connector (included)
Operating temperature	-20 to +60 °C
Rated temperature	-20 to +40 °C
Storage temperature	-25 to +60 °C
Relative humidity	5 % to 95 % without condensation
Cooling system	Smart cooling
Sound emission	< 61 dB 1 m from inverter
Altitude	0 to 2000 m
Dimensions (L x D x H)	612 x 278 x 960 mm
Weight	73 kg
Certification and applicable standards	CEI 0-21, CEI 0-16, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1
Warranty	5 years (standard), 10/15/20 years (optional extension)

(1) The accepted tolerance depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

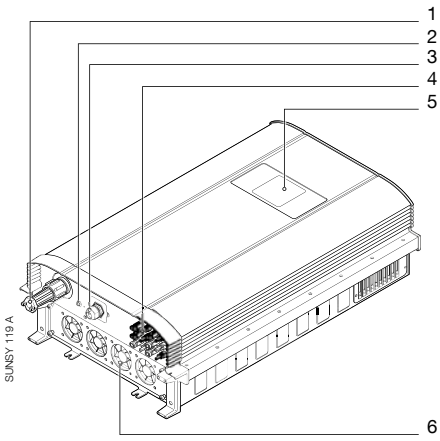
Technical data

	SUNSYS B30
PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	-
Output surge protection devices	-
Input switch	-
Output switch	-
Output magnetothermal switch	-
Output selective differential protection	-
COMMUNICATION	
RS485 interface	•
WiFi interface	-
Digital inputs/Dry contact outputs	•
MicroSD slot	-
USB port	-
Control panel	Graphic LCD with backlight

Efficiency curve

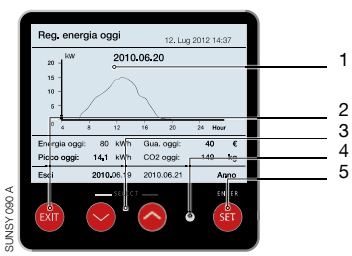


Connections



1. AC connector
2. Earth connection (PE)
3. Communication interface
4. DC connectors
5. LCD Control panel
6. Fans

Control panel



1. LCD Display
2. EXIT button
3. Selection buttons
4. LED
5. ENTER/SET button

SUNSYS P33TR/P66TR

33 and 66 kW

Modular solution for medium power plants

The best, high-efficiency performance

- SUNSYS P33TR and P66TR inverters are the ideal solution for photovoltaic installations on large roofs with power ranging between 33 and 66 kW.
- The transformer design and three-phase output make them suitable for low-voltage networks.
- The modular architecture with a three-level converter and the DPC function (SUNSYS P66TR) allow improved energy production at low levels of sunlight.
- Thanks to the transformer, SUNSYS P33TR and P66TR are fully compatible with all photovoltaic module technologies. The earthing kit allows earthing of both positive and negative poles of the solar module, in complete safety.
- The Sunsys IFB and Sunguard supervision system facilitate the monitoring and maintenance of the photovoltaic installation.

The benefits of the “Dynamic Power Control” system

- **Increased efficiency**
  The DPC system optimizes the efficiency of your installation, particularly for partial loads. The inverter starts to produce electricity at low levels of sunlight.
- **Increased lifetime**
  Thanks to the DPC, only the modules required for energy production are operational. In addition, use of the power modules is verified in a cyclical manner to share the load time. The duration of operation of a module is thus optimized, increasing the useful life of the inverter.
- **Better availability**
  If one of the inverter power modules stops (due to a fault), the system will automatically reconfigure in order to use the remaining modules as best possible, and to continue supplying the maximum possible amount of energy.

The solution for

> Installations in large commercial buildings

Certifications

The SUNSYS P solution is TÜV SÜD certified for product safety (EN 62109).

Advantages

97% MAXIMUM EFFICIENCY

WARRANTY 5 YEARS

Related products

> FJB/IFB photovoltaic enclosures, page 54

> Supervision, page 63

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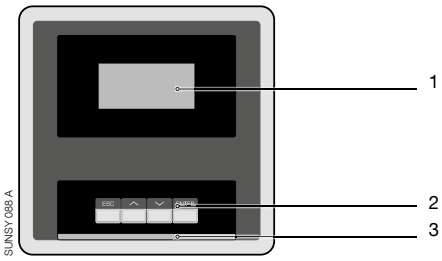
Technical data

	SUNSYS P33TR	SUNSYS P66TR
INPUT (DC)		
Maximum PV power (STC module conditions)	40000 W	80000 W
Rated voltage	550 VDC	
Maximum voltage	900 VDC	
Voltage range	350 to 900 VDC	
MPPT voltage range	450 to 850 VDC	
Start-up voltage	520 VDC	
Number of independent MPPTs	1	2
Number of input connections for MPPTs	2	
Maximum input current	80 A	80 A x 2
Maximum short-circuit current	96 A	96 A x 2
OUTPUT (AC)		
Power rating	33300 W	66600 W
Maximum power	36600 W	73400 W
Apparent power rating	33300 VA	66600 VA
Maximum apparent power	36600 VA	73400 VA
Rated voltage	400 Vrms(1) 3ph	
Voltage range	320 to 480 Vrms(1) 3ph	
Rated frequency	50 Hz(1)	
Frequency range	47.5 to 51.5 Hz(1)	
Rated current	48 Arms	96 Arms
Maximum current	53 Arms	106 Arms
Total harmonic distortion of current	< 3 %	
Power factor range	0.8 to 1(2)	
Topology	50 Hz output transformer	
LEVEL OF EFFICIENCY		
Maximum efficiency	97 %	
EU efficiency	96 %	
Consumption at night	10 W	
Maximum air demand	480 m^3/h	1280 m^3/h
Maximum dissipated power	1750 W	3500 W
Maximum dissipated power	5980 BTU/h	11950 BTU/h
Maximum dissipated power	1500 kCal/h	3000 kCal/h
GENERAL DATA		
Protection class (according to EN 62109)	Class I	
Overvoltage category (according to EN 62109)	Class III	
Environmental category (according to EN 62109)	Non-air-conditioned internal environments	
Environmental degree of protection (according to EN 62109)	IP 20	
Type of DC connectors	Copper bars for cables from 25 mm^2 to 120 mm^2 (M8)	Copper bars for cables from 25 mm^2 to 120 mm^2 (M8)
Type of AC connectors	Copper bars for cables from 16 mm^2 to 120 mm^2 (M8)	Copper bars for cables from 35 mm^2 to 120 mm^2 (M8)
Operating temperature	-5 to +60 °C	
Rated temperature	-5 to +45 °C	
Storage temperature	-5 to +60 °C	
Relative humidity	5 % to 95 % without condensation	
Cooling system	Smart cooling	
Sound emission	< 60 dB 1 m from inverter	< 64 dB 1 m from inverter
Altitude	0 to 1000 m	
Dimensions (L x D x H)	600 x 795 x 1400 mm	
Weight	330 kg	525 kg
Certification and applicable standards	CEI 0-21, CEI 0-16, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1	
Warranty	5 years (standard), 10/15/20 years (optional extension)	

(1) The tolerance accepted depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

Control panel

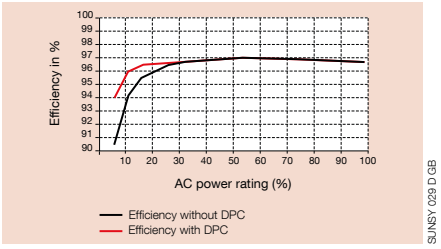


1. LCD graphic display
2. Navigation buttons
3. Inverter status light bar

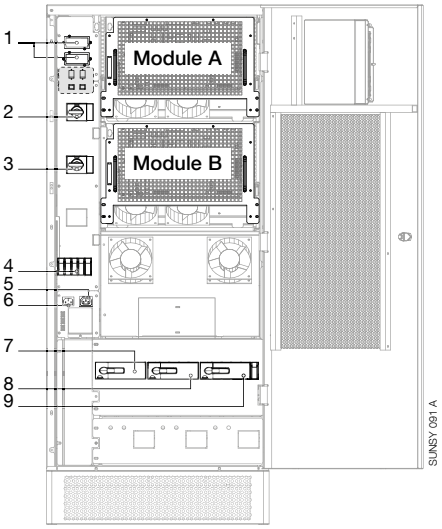
Technical data

PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	Option
Output surge protection devices	Option
Input switch	•
Output switch	•
Output magnetothermal switch	-
Output selective differential protection	-
Insulation controller	Option
Earthing kit	Option
COMMUNICATION	
RS485 interface: serial-to-Ethernet	•/•
WiFi interface	-
Digital inputs/Dry contact outputs	Option
MicroSD slot	-
USB port	•
Control panel	Graphic LCD with backlight

Efficiency curve



Connections



1. Communication slot
2. Module A output isolator
3. Module B output isolator
4. Isolators with fuse
5. IEC320 AUX output for assistance
6. IEC320 AUX power supply input
7. Inverter output isolator
8. Module B input isolator
9. Module A input isolator

SUNSYS P100TR

100 kW

Modular architecture for high power

The best, high-efficiency performance

- The SUNSYS P100TR inverter is the ideal solution for photovoltaic plants that are connected to a low-voltage network with 100 kW power.
- The modular architecture with a three-level converter and the DPC function allow improved energy production at low levels of sunlight.
- SUNSYS P100TR is compatible with all photovoltaic module technologies and with a wide range of string configurations.
- The Sunsys IFB and Sunsys Sunguard options facilitate system supervision and maintenance.

The benefits of the “Dynamic Power Control” system

- **Increased efficiency**
  The DPC system optimizes the efficiency of your installation, particularly for partial loads. The inverter starts to produce electricity at low levels of sunlight.
- **Increased lifetime**
  Thanks to the DPC, only the modules required for energy production are operational. In addition, use of the power modules is verified in a cyclical manner to share the load time. The duration of operation of a module is thus optimized, increasing the useful life of the inverter.
- **Better availability**
  If one of the inverter power modules stops (due to a fault), the system will automatically reconfigure in order to use the remaining modules as best possible, and to continue supplying the maximum possible amount of energy.

The solution for

> Installations in large commercial buildings

Certifications

The SUNSYS P solution is TÜV SÜD certified for product safety (EN 62109).

Advantages

97% MAXIMUM EFFICIENCY

WARRANTY 5 YEARS

Related products

> FJB/IFB photovoltaic enclosures, page 54

> Supervision, page 63

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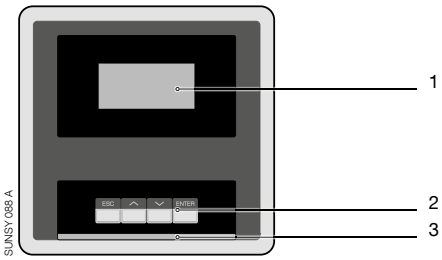
Technical data

	SUNSYS P100TR
INPUT (DC)	
Maximum PV power (STC module conditions)	120000 W
Rated voltage	550 VDC
Maximum voltage	900 VDC
Voltage range	350 to 900 VDC
MPPT voltage range	450 to 850 VDC
Start-up voltage	520 VDC
Number of independent MPPTs	3
Number of input connections for MPPTs	2
Maximum input current	80 A x 3
Maximum short-circuit current	96 A x 3
OUTPUT (AC)	
Power rating	100000 W
Maximum power	110000 W
Apparent power rating	100000 VA
Maximum apparent power	110000 VA
Rated voltage	400 Vrms(1) 3ph
Voltage range	320 to 480 Vrms(1) 3ph
Rated frequency	50 Hz(1)
Frequency range	47.5 to 51.5 Hz(1)
Rated current	144 Arms
Maximum current	160 Arms
Total harmonic distortion of current	< 3 %
Power factor range	0.8 to 1(2)
Topology	50 Hz output transformer
LEVEL OF EFFICIENCY	
Maximum efficiency	97 %
EU efficiency	96 %
Consumption at night	10 W
Maximum air demand	1760 m^3/h
Maximum dissipated power	5250 W
Maximum dissipated power	17900 BTU/h
Maximum dissipated power	4500 kCal/h
GENERAL DATA	
Protection class (according to EN 62109)	Class I
Overvoltage category (according to EN 62109)	Class III
Environmental category (according to EN 62109)	Non-air-conditioned internal environments
Environmental degree of protection (according to EN 62109)	IP 20
Type of DC connectors	Copper bars for cables from 25 mm^2 to 120 mm^2 (M8)
Type of AC connectors	Copper bars for cables from 70 mm^2 to 120 mm^2 (M8)
Operating temperature	-5 to +60 °C
Rated temperature	-5 to +45 °C
Storage temperature	-5 to +60 °C
Relative humidity	5 % to 95 % without condensation
Cooling system	Smart cooling
Sound emission	< 64 dB 1 m from inverter
Altitude	0 to 1000 m
Dimensions (L x D x H)	1200 x 795 x 1400 mm
Weight	770 kg
Certification and applicable standards	CEI 0-21, CEI 0-16, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1
Warranty	5 years (standard), 10/15/20 years (optional extension)

(1) The accepted tolerance depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

Control panel

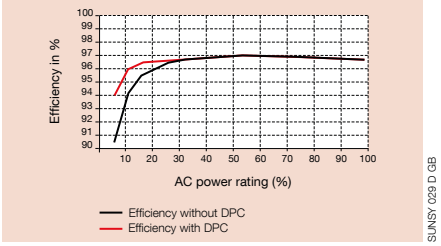


1. LCD graphic display
2. Navigation buttons
3. Inverter status light bar

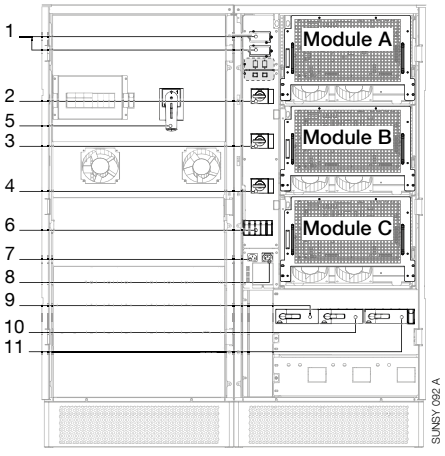
Technical data

PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	Option
Output surge protection devices	Option
Input switch	•
Output switch	•
Output magnetothermal switch	-
Output selective differential protection	-
Insulation controller	Option
Earthing kit	Option
COMMUNICATION	
RS485 interface: serial-to-Ethernet	•/•
WiFi interface	-
Digital inputs/Dry contact outputs	Option
MicroSD slot	-
USB port	•
Control panel	Graphic LCD with backlight

Efficiency curve



Connections



1. Communication slot
2. Module A output isolator
3. Module B output isolator
4. Module C output isolator
5. Inverter output isolator
6. Isolators with fuse
7. IEC320 AUX power supply input
8. IEC320 AUX output for assistance
9. Module C input isolator
10. Module B input isolator
11. Module A input isolator

SUNSYS P66TL/P100TL

66 and 100 kW

Maximum efficiency under all weather conditions

The best, high-efficiency performance

- SUNSYS P66TL and P100TL inverters are the ideal solution for photovoltaic applications in solar parks with power greater than 66 kW.
- The transformerless design and three-phase output make them suitable for connection to medium-voltage networks.
- The modular architecture with three-level conversion, the DPC function and the transformerless architecture, optimize energy production at all levels of sunlight.
- Thanks to the channelled ventilation, different units can be placed side by side, obtaining high levels of power in a more compact space.
- The Sunsys IFB and Sunguard supervision system facilitate the monitoring and maintenance of the photovoltaic installation.

The benefits of the “Dynamic Power Control” system

- **Increased efficiency**
  The DPC system optimizes the efficiency of your installation, particularly for partial loads. The inverter starts to produce electricity at low levels of sunlight.
- **Increased lifetime**
  Thanks to the DPC, only the modules required for energy production are operational. In addition, use of the power modules is verified in a cyclical manner to share the load time. The duration of operation of a module is thus optimized increasing the useful life of the inverter.
- **Better availability**
  If one of the inverter power modules stops (due to a fault), the system will automatically reconfigure in order to use the remaining modules as best possible, and to continue supplying the maximum possible amount of energy.

The solution for

> Solar park installations
> Medium voltage network installations

Certifications

The SUNSYS P solution is TÜV SÜD certified for product safety (EN 62109).

Advantages

98% MAXIMUM EFFICIENCY

WARRANTY 5 YEARS

Related products

> FJB/IFB photovoltaic enclosures, page 54

> Supervision, page 63

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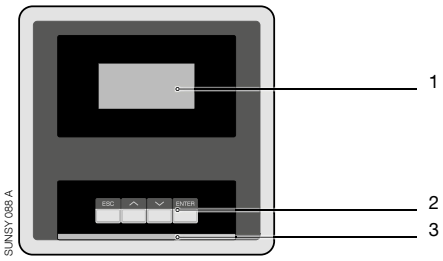
Technical data

	SUNSYS P66TL	SUNSYS P100TL
INPUT (DC)		
Maximum PV power (STC module conditions)	80000 W	120000 W
Rated voltage	550 VDC	
Maximum voltage	900 VDC	
Voltage range	350 to 900 VDC	
MPPT voltage range	450 to 850 VDC	
Start-up voltage	520 VDC	
Number of independent MPPTs	2	3
Number of input connections for MPPTs	2	
Maximum input current	80 A x 2	80 A x 3
Maximum short-circuit current	96 A x 2	96 A x 3
OUTPUT (AC)		
Power rating	66600 W	100000 W
Maximum power	73400 W	110000 W
Apparent power rating	66600 VA	100000 VA
Maximum apparent power	73400 VA	110000 VA
Rated voltage	280 Vrms(1) 3ph	
Voltage range	224 to 336 Vrms(1) 3ph	
Rated frequency	50 Hz(1)	
Frequency range	47.5 to 51.5 Hz(1)	
Rated current	137 Arms	206 Arms
Maximum current	152 Arms	227 Arms
Total harmonic distortion of current	< 3 %	
Power factor range	0.8 to 1(2)	
Topology	Transformerless	
LEVEL OF EFFICIENCY		
Maximum efficiency	98 %	
EU efficiency	97.6 %	
Consumption at night	10 W	
Maximum air demand	960 m^3/h	1440 m^3/h
Maximum dissipated power	2470 W	3650 W
Maximum dissipated power	8420 BTU/h	12450 BTU/h
Maximum dissipated power	2130 kCal/h	3150 kCal/h
GENERAL DATA		
Protection class (according to EN 62109)	Class I	
Overvoltage category (according to EN 62109)	Class III	
Environmental category (according to EN 62109)	Non-air-conditioned internal environments	
Environmental degree of protection (according to EN 62109)	IP 20	
Type of DC connectors	Copper bars for cables from 25 mm^2 to 120 mm^2 (M8)	Copper bars for cables from 25 mm^2 to 120 mm^2 (M8)
Type of AC connectors	Copper bars for cables from 70 mm^2 to 120 mm^2 (M8)	Copper bars for 120 mm^2 (M8) cables
Operating temperature	-5 to +60 °C	
Rated temperature	-5 to +45 °C	
Storage temperature	-5 to +60 °C	
Relative humidity	5 % to 95 % without condensation	
Cooling system	smart cooling	
Sound emission	< 64 dB 1 m from inverter	
Altitude	0 to 1000 m	
Dimensions (L x D x H)	600 x 795 x 1400 mm	
Weight	155 kg	190 kg
Certification and applicable standards	CEI 0-21, CEI 0-16, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1	
Warranty	5 years (standard), 10/15/20 years (optional extension)	

(1) The accepted tolerance depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

Control panel

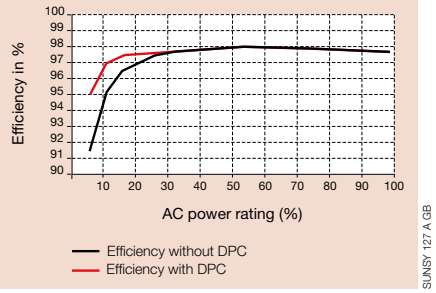


1. LCD graphic display
2. Navigation buttons
3. Inverter status light bar

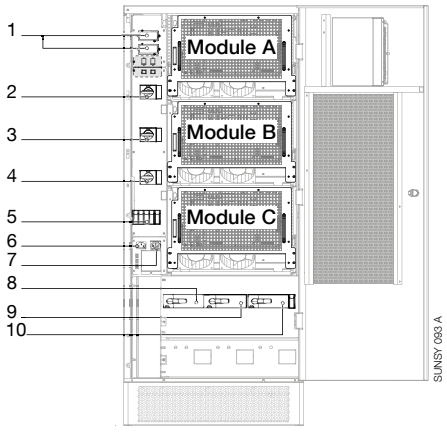
Technical data

PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	Option
Output surge protection devices	Option
Input isolator	•
Output isolator	•
Output magnetothermal switch	-
Output selective differential protection	-
Insulation controller	Option
Earthing kit	Option
COMMUNICATION	
RS485 interface: serial-to-Ethernet	•/•
WiFi interface	-
Digital inputs/Dry contact outputs	Option
MicroSD slot	-
USB port	•
Control panel	Graphic LCD with backlight

Efficiency curve



Connections



1. Communication slot
2. Module A output isolator
3. Module B output isolator
4. Module C output isolator
5. Isolators with fuse
5. IEC320 AUX power supply input
7. IEC320 AUX output for assistance
8. Module C input isolator
9. Module B input isolator
10. Module A input isolator

SUNSYS P66TL1K/P100TL1K

66 and 100 kW

Maximum efficiency under all weather conditions

new

Input Voltage
up to 1000 VDC

The solution for

- Solar park installations
- Medium voltage network installations

Certifications

The SUNSYS P solution is TÜV SÜD certified for product safety (EN 62109).

MADE IN EUROPE

Advantages

98.3% MAXIMUM EFFICIENCY

WARRANTY 5 YEARS

Related products

> FJB/IFB photovoltaic enclosures, page 54

> Supervision, page 63

The best, high-efficiency performance

- SUNSYS P66TL1K and P100TL1K inverters are the ideal solution for photovoltaic applications in solar parks with power greater than 66 kW with PV voltage up to 1000 VDC.
- The transformerless design and three-phase output make them suitable for connection to medium-voltage networks.
- The modular architecture with three-level conversion, the DPC function and the transformerless architecture, optimize energy production at all levels of sunlight.
- Thanks to the channelled ventilation, different units can be placed side by side, obtaining high levels of power in a more compact space.
- The Sunsys IFB and Sunguard supervision system facilitate the monitoring and maintenance of the photovoltaic installation.

The benefits of the “Dynamic Power Control” system

- **Increased efficiency**
  The DPC system optimizes the efficiency of your installation, particularly for partial loads. The inverter starts to produce electricity at low levels of sunlight.
- **Increased lifetime**
  Thanks to the DPC, only the modules required for energy production are operational. In addition, use of the power modules is verified in a cyclical manner to share the load time. The duration of operation of a module is thus optimized, increasing the useful life of the inverter.
- **Better availability**
  If one of the inverter power modules stops (due to a fault), the system will automatically reconfigure in order to use the remaining modules as best possible, and to continue supplying the maximum possible amount of energy.

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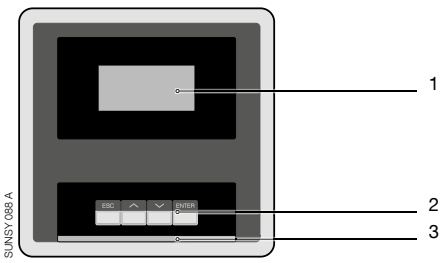
Technical data

	SUNSYS P66TL1K	SUNSYS P100TL1K
INPUT (DC)		
Maximum PV power (STC module conditions)	80000 W	120000 W
Rated voltage	600 VDC	
Maximum voltage	1000 VDC	
Voltage range	400 to 1000 VDC	
MPPT voltage range	485 to 850 VDC	
Start-up voltage	570 VDC	
Number of independent MPPTs	2	3
Number of input connections for MPPTs	2	
Maximum input current	80 A x 2	80 A x 3
Maximum short-circuit current	96 A x 2	96 A x 3
OUTPUT (AC)		
Power rating	66600 W	100000 W
Maximum power	73400 W	110000 W
Apparent power rating	66600 VA	100000 VA
Maximum apparent power	73400 VA	110000 VA
Rated voltage	320 Vrms(1) 3ph	
Voltage range	256 to 384 Vrms(1) 3ph	
Rated frequency	50 Hz(1)	
Frequency range	47.5 to 51.5 Hz(1)	
Rated current	120 Arms	180 Arms
Maximum current	144 Arms	216 Arms
Total harmonic distortion of current	< 3 %	
Power factor range	0.8 to 1(2)	
Topology	Transformerless	
LEVEL OF EFFICIENCY		
Maximum efficiency	98.3 %	
EU efficiency	98.0% %	
Consumption at night	10 W	
Maximum air demand	960 m^3/h	1440 m^3/h
Maximum dissipated power	2400 W	3650 W
Maximum dissipated power	8190 BTU/h	12455 BTU/h
Maximum dissipated power	2065 kCal/h	3140 kCal/h
GENERAL DATA		
Protection class (according to EN 62109)	Class I	
Overvoltage category (according to EN 62109)	Class III	
Environmental category (according to EN 62109)	Non-air-conditioned internal environments	
Environmental degree of protection (according to EN 62109)	IP 20	
Type of DC connectors	Copper bars for cables from 25 mm^2 to 120 mm^2 (M8)	Copper bars for cables from 25 mm^2 to 120 mm^2 (M8)
Type of AC connectors	Copper bars for cables from 70 mm^2 to 120 mm^2 (M8)	Copper bars for 120 mm^2 (M8) cables
Operating temperature	-5 to +60 °C	
Rated temperature	-5 to +45 °C	
Storage temperature	-5 to +60 °C	
Relative humidity	5 % to 95 % without condensation	
Cooling system	smart cooling	
Sound emission	< 64 dB 1 m from inverter	
Altitude	0 to 1000 m	
Dimensions (L x D x H)	600 x 795 x 1400 mm	
Weight	125 kg	190 kg
Certification and applicable standards	CEI 0-21, CEI 0-16, VDE AR-N 4105, VDE 0126-1-1, UTE C15-712-1	
Warranty	5 years (standard), 10/15/20 years (optional extension)	

(1) The accepted tolerance depends on the country of installation and the regulations in force.
(2) Setup according to the requirements of the electricity supplier.

Control panel

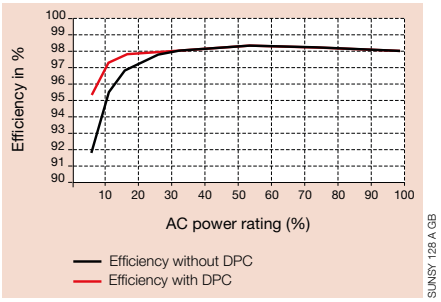


1. LCD graphic display
2. Navigation buttons
3. Inverter status light bar

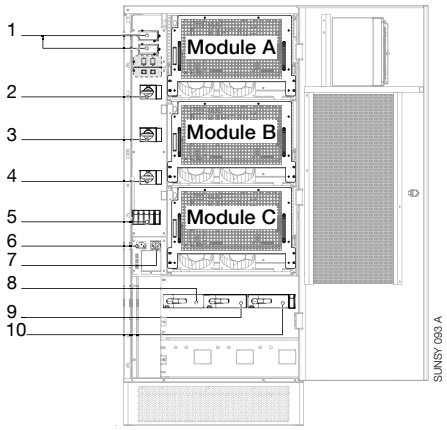
Technical data

PROTECTION DEVICES	
Output short-circuit protection	•
Reverse-polarity protection	•
Monitoring of earth leakage	•
Monitoring of faulty currents	•
Input surge protection devices	Option
Output surge protection devices	Option
Input switch	•
Output switch	•
Output magnetothermal switch	-
Output selective differential protection	-
Insulation controller	Option
Earthing kit	Option
COMMUNICATION	
RS485 interface: serial-to-Ethernet	•/•
WiFi interface	-
Digital inputs/Dry contact outputs	Option
MicroSD slot	-
USB port	•
Control panel	Graphic LCD with backlight

Efficiency curve



Connections



1. Communication slot
2. Module A output isolator
3. Module B output isolator
4. Module C output isolator
5. Isolators with fuse
5. IEC320 AUX power supply input
7. IEC320 AUX output for assistance
8. Module C input isolator
9. Module B input isolator
10. Module A input isolator

SUNSYS Shelter

Solar Power System in shelter or container

A perfect tailor-made solution

- Complete infrastructure for medium and large photovoltaic power plants to be installed between the photovoltaic modules and the MV network.
- Suitable for installation in harsh environments with heavy climatic and weather conditions (i.e. desert, marine and industrial applications).
- Modular solution up to 2 MVA in a single 40 ft container managing up to 60 independent MPPT.
- Fully assembled and tested turnkey solution ready to be installed.
- Easy transportation via road, rail or water in 20 ft or 40 ft high-cube container.
- No construction permit required.
- Property cost savings.

A comprehensive infrastructure

- SUNSYS SHELTER is a complete infrastructure in shelter or container including the following devices according to the application:
  - SUNSYS P100TL or P100TL1K photovoltaic inverters,
  - SUNSYS HPS hybrid power system,
  - SUNSYS PCS² power conversion system and storage,
  - IFB enclosures,
  - low-voltage protection board,
  - medium-voltage protection board
  - network interface device,
  - certified energy meter, conductors and accessories,
  - high output three-phase medium voltage transformer,
  - high-efficiency, three-phase auxiliary server,
  - air conditioning system,
  - monitoring system.
- Full metal structure sized for static and electromagnetic protection.
- Wall and roof thermal insulation ensures the highest protection against water, wind, sand and dust even in the worst operating conditions.
- Internal wall and ceiling materials provide fire protection that meet international standard requirements.

The solution for

> PV production and energy storage in on-grid applications
> PV production and energy storage in off-grid applications

The benefits

> High efficiency in all types of weather conditions
> High reliability
> Fault-tolerant solution
> Savings on the overall cost of the plant

SOCOMEC: guaranteed bankability

A solar park is an investment that often requires additional funding. Due to our financial stability, independence, recognized expertise and the quality of the proposed solutions provided to create many prestigious photovoltaic installations, SOCOMEC is a bankable company with a solid reputation among credit institutions.

Related products

> SUNSYS inverters, page 12
> SUNSYS HPS hybrid power system, page 46
> SUNSYS PCS² power conversion system and storage, page 42
> IFB enclosures, page 54

Centralized Grounding Kit option

The single centralized grounding kit, available as option for all SUNSYS P inverters installed in the same PV plant, allows to earth the solar modules in total safety and permanently control the status of the photovoltaic field, signalling any irregularities and maintaining the operating status of the entire plant.

socomec Innovative Power Solutions

Specialist service for your projects

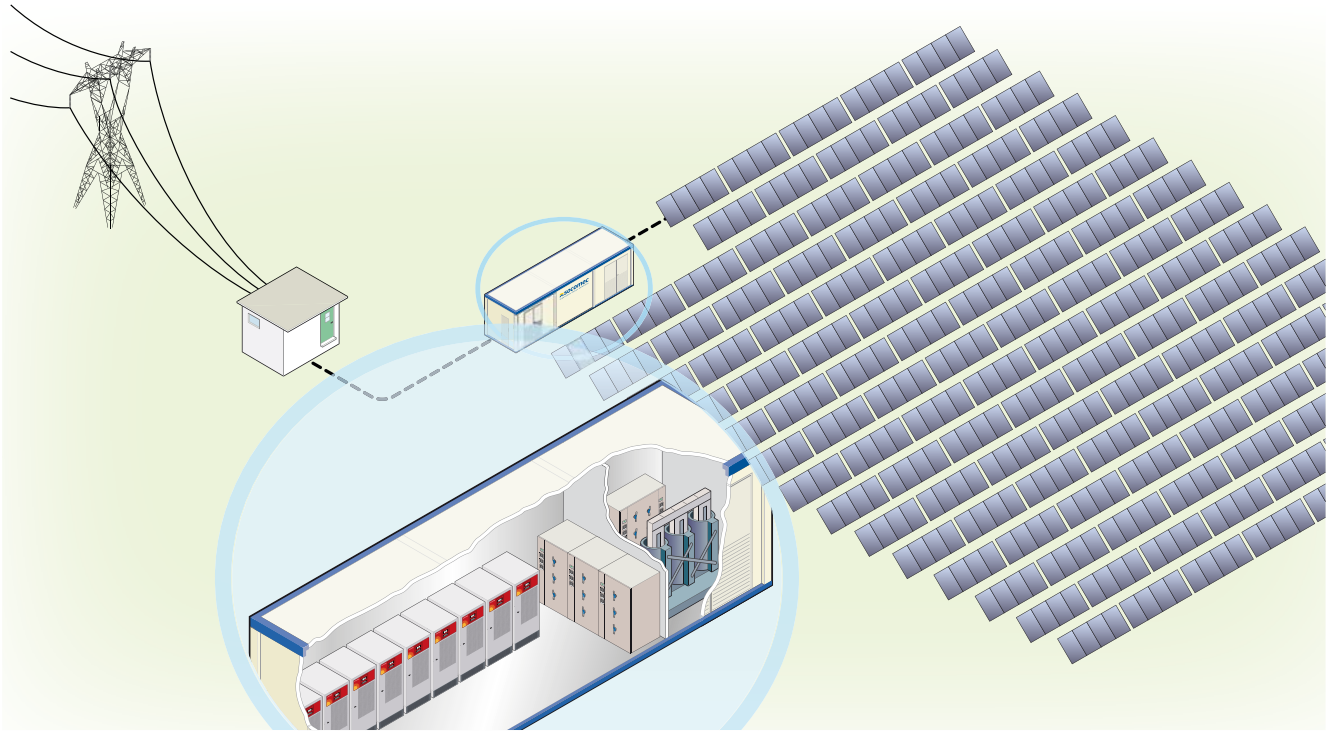
The SOCOMEC pre-sales service personnel will help develop a tailor-made solution for your installation site, optimising efficiency and reliability, as well the output of your investment. Our engineers will design, develop and configure the project in collaboration with you - the customer - in mind. Our technical assistance service is on-hand to commission and activate the site, configure the system and if necessary provide customer training.

Quality of materials

SOCOMEC has selected partners that supply high-quality European-manufactured materials. The materials are designed to last in critical operating and environmental conditions and to guarantee continuous operation throughout the entire life of the installation. The electrical dimensioning of components and the thermal adaptation of technical rooms ensure that components operate in favourable conditions and maximize their lifetime.

APPLI 622 A

Example of application: solar park



SHELT 004 A

SUNSYS Shelter

Solar Power System in shelter or container

Solution in container

SUNSYS P100TL - P100TL1K


SUNSY 048 B

- Three-phase photovoltaic inverter.
- Output power rating: 100 kW.
- Modular architecture with three-level conversion.
- DPC (Dynamic Power Control) function.
- Transformerless architecture.
- Maximum efficiency: 98 %.

Further information, p. 32 & 34.

IFB enclosures


COFF-PV 023 A

- Photovoltaic string protection and monitoring enclosures.
- For parallel connection, protection and isolation up to 32 strings.
- Protection against overvoltage.
- Monitoring of the strings and photovoltaic installation.

Further information, p. 54.

MV protection enclosure

- Prefabricated NMG cells or similar.
- Rated voltage: 20 kV(1).
- Isolation voltage: 24 kV(1).
- Rated frequency: 50/60 Hz.
- Rated current: 630 A(1).
- Short-circuit current: 12.5 kA.
- Degree of protection: IP30.
- Compliance to standards: IEC EN 62271-100.
- Includes isolation box with fuses and transformer isolation cell with break switch.

MV/LV transformer


SHELT 007 A

- Epoxy resin isolated three-phase transformer.
- Power: 160 to 2000 kVA (depending on the number of inverters).
- Vn1: 20 kV(1).
- Vn2: 0.28 kV or 0,32 kV.
- Dyn11 group.
- Frequency: 50 Hz.
- Temperature probe: 3 x PT100 probes and digital thermometric monitoring controller.
- Options: additional ventilation kits.

LV protection enclosure

- FUSERBLOC, fuse combination switches.
- Insulation controller.
- SURGYS G51-PV and SURGYS D40, surge protection devices (page 61).
- Thermometric measurement switchboard for transformer protection and certified current transformers for measurements.

Three-phase auxiliary server transformer

- Epoxy resin.
- Power: 10/16/25/50 kVA (depending on the number of inverters).
- Vn1 primary voltage: 0.40 kV.
- Vn2 secondary voltage: 0.28 kV or 0.32 kV.
- Frequency: 50 Hz.

SUNSYS HPS


SUNSY 120 A

- Three-phase hybrid power system
- Output power from 40 to 200 kVA.
- Power scalability up to 1.2 MVA

Further information, p. 46.

ITYS ES


GAMME 152 A

- Single-phase UPS system for supplying MV/LV transformer cabins.
- Power: 1000/2000/3000 VA.
- Technology: VFI - online double conversion.
- Output rated voltage: 230 VAC.
- Permanent regulation of output voltage and frequency.
- Internal batteries.

Enclosure for meters

- Durable resin enclosure placed close to the inverter's mains box.
- Certified energy meter.
- Conductors.
- Accessories.

Air-conditioning

- Forced ventilation controlled by two thermostats, one for the transformer room and one for the inverter room.
- High precision free-cooling operating system.
- Three-phase air-conditioner.
- Rated thermal power: 10.5 kW, 36100 BTU(1).
- Rated electric power: 2.94 kW(1).
- Rated voltage supply: 400 VAC/50 Hz.

Supervision

- SUNGUARD, monitoring system (page 66).
- DIRIS, monitoring of energy efficiency (page 76).

SUNSYS PCS²


SUNSY 126 A

- Power conversion system and storage.
- Output power from 33 to MW.
- Modular, flexible and scalable solutions.
- Highly efficient.
- Compatible with different battery technologies depending on the application (e.g. lead-acid, lithium-ion).

Further information, p. 42.

(1) Others on request.

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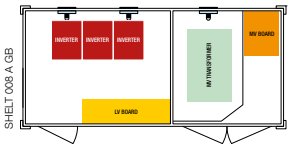
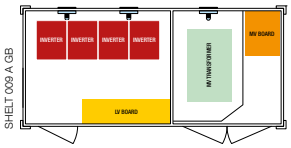
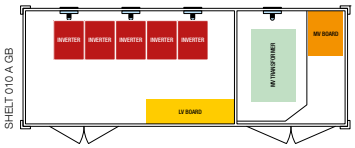
Shelter - standard configurations for on-grid applications



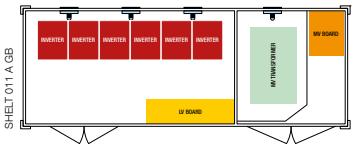
330 kWp - 3 inverters
L x D x H: 5400 x 2550 x 3000 mm.



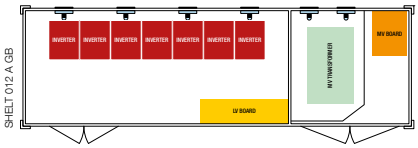
440 kWp - 4 inverters
L x D x H: 5400 x 2550 x 3000 mm.



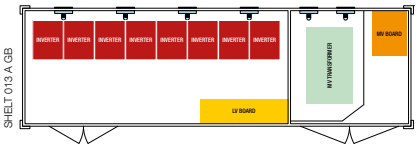
550 kWp - 5 inverters
L x D x H: 6700 x 2550 x 3000 mm.



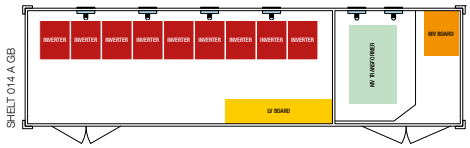
660 kWp - 6 inverters
L x D x H: 6700 x 2550 x 3000 mm.



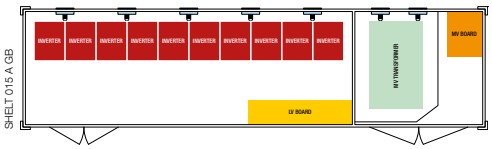
770 kWp - 7 inverters
L x D x H: 8000 x 2550 x 3000 mm.



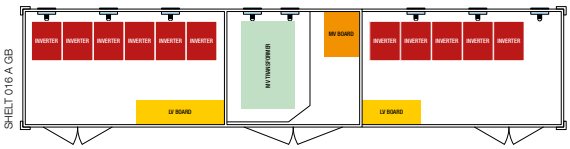
880 kWp - 8 inverters
L x D x H: 8000 x 2550 x 3000 mm.



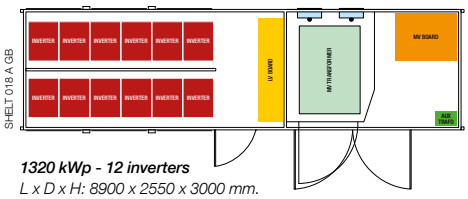
990 kWp - 9 inverters
L x D x H: 9000 x 2550 x 3000 mm.



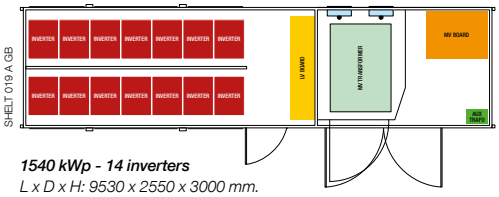
1100 kWp - 10 inverters
L x D x H: 9500 x 2550 x 3000 mm.



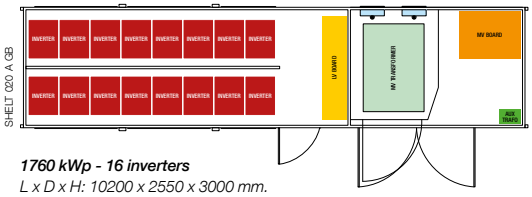
1210 kWp - 11 inverters
L x D x H: 11100 x 2550 x 3000 mm.



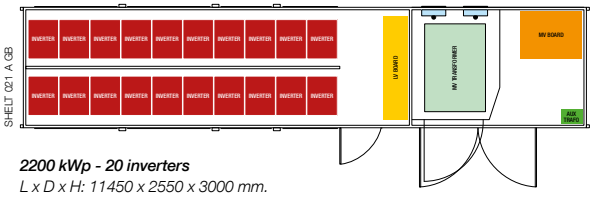
1320 kWp - 12 inverters
L x D x H: 8900 x 2550 x 3000 mm.



1540 kWp - 14 inverters
L x D x H: 9530 x 2550 x 3000 mm.



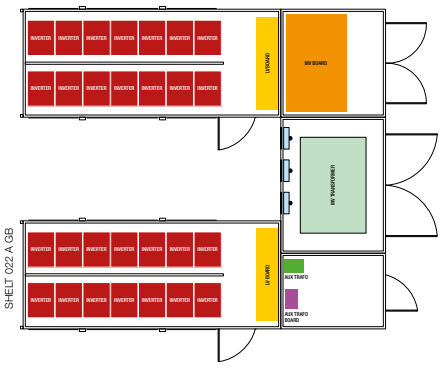
1760 kWp - 16 inverters
L x D x H: 10200 x 2550 x 3000 mm.



2200 kWp - 20 inverters
L x D x H: 11450 x 2550 x 3000 mm.

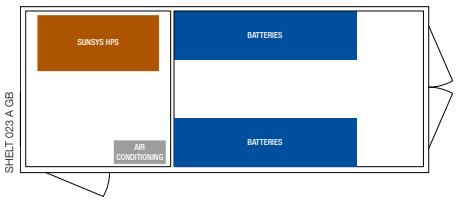
Inverter *LV board* *MV board* *MV transformer*
Auxiliary transformer *Fan*

Shelter - special configurations for on-grid applications



3.08 MWp - 28 inverters
L x D x H: 8530 x 7400 x 3000 mm.

Container - standard configurations for off-grid applications



Inverter *LV board* *MV board* *MV transformer*
Auxiliary transformer *Fan* *SUNSYS HPS* *Batteries*

Energy storage for on-grid applications

By definition, renewable energy is intermittent: when there is no wind or sunlight no energy can be produced. Intelligent systems are required to store the energy produced in an intermittent and decentralized way, and to control its distribution depending on the highly fluctuating demand of customers.

SOCOMEC SUNSYS PCS² Power Conversion System and Storage is the solution for self-consumption maximization in Smart Grid networks, grid stabilization in on-grid applications and islanding applications.

Self-consumption maximization in Smart Grid networks

- The renewable energy produced is converted into AC current and used to supply the loads. Surplus energy produced is stored in the SUNSYS PCS² battery system.
- When there's no renewable energy production, SUNSYS PCS² converts the energy stored in its battery system into AC current and used to supply the loads.
- When there's no renewable energy production and batteries are fully discharged, the loads are supplied by the utility.

Grid stabilization in on-grid applications

When the renewable energy production is lower or higher than demand, SUNSYS PCS² stabilizes the grid by:

- charging the battery in case of energy overproduction to maintain frequency values within tolerated thresholds,
- injecting the energy into the grid from batteries when energy demand is higher than availability.

Islanding applications

Installed in the MV/LV transformer station, SUNSYS PCS² can be used to autonomously supply the low voltage network if the mains is disconnected from the grid because of a fault or for intentional load-shedding.

SUNSYS PCS² Power Conversion System and Storage ..... p. 42

The Socomec Group, partner of the

NICE GRID
A SMART SOLAR DISTRICT

An innovative project for the future, organized by French electricity distribution company ERDF as part of a consortium comprising Alstom, Saft, EDF, Armines, RTE, Netseenergy, Daikin, Watteco and Socomec.

Aims of the demonstrator programme:

> The massive integration of decentralised renewable energy

> The programmed "off grid" autonomy of a cluster of electricity consumers

SUNSYS PCS²

Power Conversion System and Storage

Socomec offers an innovative storage solution that bears the hallmark of over 40 years of experience and expertise in energy storage and conversion.

SUNSYS PCS² is the solution for maximizing the output from renewable energy installations, easily integrating them into the existing electricity network and into future microgrid systems.

SUNSYS PCS² is a modular “hot swap” scalable system, with power from a few kW to MW extendable through different parallel units, which are set up in a mixed configuration with the SOCOMEC photovoltaic inverter and different battery technologies depending on the applications to be covered.

With the totally innovative specifications of SUNSYS PCS², SOCOMEC is one of the first manufacturers in the world able to satisfy different applications with one single product (PV conversion, dynamic demand response, peak shaving, load shifting, outage protection).

The solution for optimum energy management

- Energy shifting, peak shaving and grid stabilising (active and reactive power) functions.
- Modular, flexible and scalable.
- Highly efficient.
- Compatible with different battery technologies (e.g. lead-acid, lithium-ion) and ultracapacitor energy storage systems.
- Can be integrated with existing photovoltaic installations.
- Simple and rapid configuration.
- Easy to configure backup thanks to the scalable battery modules.
- Power and backup adaptable to the installation extensions.

The solution for

> Maximizing energy management

Advantages

98% MAXIMUM EFFICIENCY

MADE IN EUROPE

Options

> Isolation monitoring device
> Input and output surge protections

Related products

> SUNSYS Shelter, page 36

socomec Innovative Power Solutions

Technical data - PCS² power converters

	With transformer			Without transformer	
	SUNSYS-PCS2-33TR	SUNSYS-PCS2-66TR	SUNSYS-PCS2-100TR	SUNSYS-PCS2-66TL	SUNSYS-PCS2-100TL
INPUT (DC)					
DC battery voltage	450 - 850 Vdc			450 - 850 Vdc	
Number of independent converters	1	2	3	2	3
Maximum discharging current	80 A	160 A	240 A	160 A	240 A
Maximum recharging current	80 A	160 A	240 A	160 A	240 A
OUTPUT (AC)					
Rated power	33300 W	66600 W	100000 W	66600 W	100000 W
Maximum power	36600 W	73400 W	110000 W	73400 W	110000 W
Rated apparent power	33300 VA	66600 VA	100000 VA	66600 VA	100000 VA
Maximum apparent power	36600 VA	73400 VA	110000 VA	73400 VA	110000 VA
Rated voltage	400 Vrms(1) 3ph			280 Vrms(1) 3ph	
Voltage tolerance	320 - 480 Vrms(1) 3ph			224 - 336 Vrms(1) 3ph	
Rated frequency	50 Hz(1)			50 Hz(1)	
Frequency range	47.5 - 51.5 Hz(1)			47.5 - 51.5 Hz(1)	
Rated current	48 Arms	96 Arms	144 Arms	137 A rms	206 A rms
Maximum current	53 Arms	106 Arms	160 Arms	152 A rms	227 A rms
THDI (%)	< 3 %			< 3 %	
Topology	Single conversion - Output transformer			Single conversion - Without transformer	
EFFICIENCY					
Maximum efficiency	97 %			98 %	
European efficiency	96 %			97.5 %	
ENVIRONMENT					
Environmental category	Non-air-conditioned indoor space			Non-air-conditioned indoor space	
Degree of protection	IP 20			IP 20	
Operating ambient temperature	-5 °C - +60 °C			-5 °C - +60 °C	
Rated temperature	-5 °C - +45 °C			-5 °C - +45 °C	
Storage temperature	-5 °C - +60 °C			-5 °C - +60 °C	
Relative humidity	5 % - 95 % without condensation			5 % - 95 % without condensation	
Cooling system	Smart cooling			Smart cooling	
Acoustic level at 1 m	< 60 dB	< 64 dB		< 64 dB	
Altitude	0 - 1000 m			0 - 1000 m	
Dimensions (W x D x H)	600 x 795 x 1400 mm		1200 x 795 x 1400 mm	600 x 795 x 1400 mm	
Weight	330 kg	525 kg	770 kg	155 kg	190 kg

(1) Depending on the specific country and regulations.

Technical data - PCS² energy storage

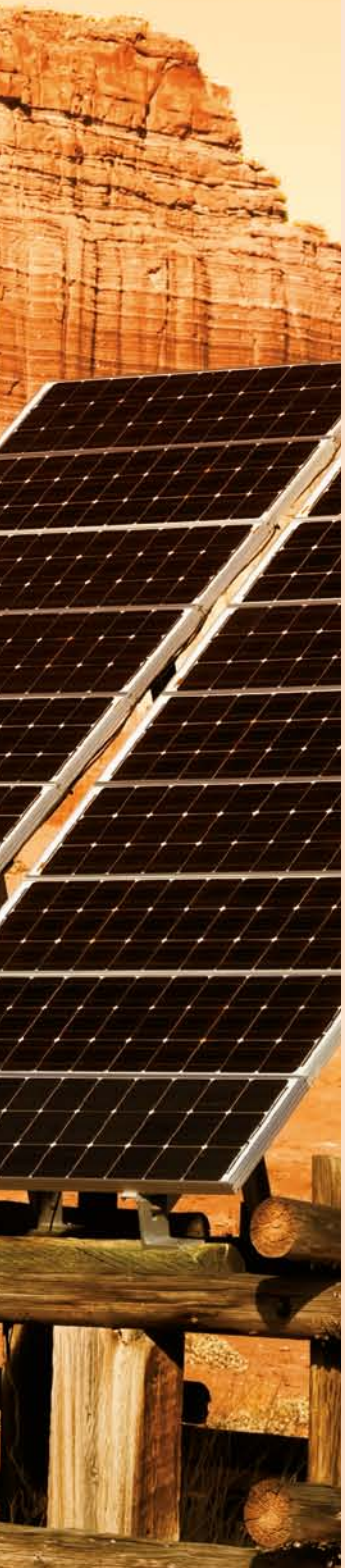
SUNSYS LITHIUM

- High rapid discharge performance (peak shaving applications).
- High number of charge/discharge cycles.
- High energy density.
- Highly compact.
- Easy scalability.
- Easy to maintain (hot-swap plug-in).
- Long life cycle.
- Maintenance-free.
- Zero environmental impact.

SUNSYS LEAD

- High performance.
- Solution suitable for fast charge systems.
- Suitable for installations in harsh environments.
- Highly compact.
- Easy to service.
- Cooling fans included.

	SUNSYS LITHIUM		SUNSYS LEAD	
	SUNSYS-AB-LT30	SUNSYS-AB-LT38	SUNSYS-AB-LA22	SUNSYS-AB-LA32
Technology	Lithium ion battery		Lead	
Rated capacity	30 kWh	38 kWh	22 kWh (C1) - 33 kWh (C10)	32 kWh (C1) - 49 kWh (C10)
Rated voltage	616 V	784 V	528 V	
Rated recharging time	4 h		6 h	
Degree of protection	IP20		IP20	
Temperature range during charging	0 °C to +40 °C		-5 °C to +40 °C	
Temperature range during discharging	-5 °C to +65 °C		-5 °C to +40 °C	
Operating ambient temperature	25 °C		20 °C	
Dimensions (W x D x H)	600 x 795 x 1400 mm	600 x 795 x 1700 mm	600 x 860 x 1925 mm	



PV production and Energy storage for off-grid applications

SOCOMEC solutions for off-grid applications are ideal for locations that are not served by the public grid and relying on diesel generators, for locations connected to unreliable public power grids or even remote, hard-to-reach regions that are unelectrified.

Our solutions enable access to cheaper and more environmentally-friendly energy by reducing the use of diesel generators and guarantying a continuous safe power supply.

Remote locations

- Public power grid: not present.
- Energy source: diesel generators.
- Energy quality: unstable voltage and frequency.
- Energy costs: very high due to fluctuating price of diesel, high shipping costs, premature aging of diesel generators operating at reduced power, maintenance costs.
- Location requirements:
  - provide quick, easy energy access in areas far away from existing power grids,
  - reduce costs linked to diesel consumption and supply,
  - maximize the diesel generator service life,
  - reduce CO_2 emissions.

Locations connected to a disturbed public power grid

- Public power grid: present.
- Energy quality: unreliable power with frequent outages.
- Auxiliary energy source: diesel generators.
- Energy costs: very high due to fluctuating price of diesel, high shipping costs, premature aging of diesel generators operating at reduced power, maintenance costs.
- Location requirements:
  - ensure a continuous high quality power supply,
  - reduce costs linked to diesel consumption,
  - reduce CO_2 emissions.

SUNSYS HPS, Hybrid Power Systems from 40 kVA to 1.2 MVA ..... p. 46

SUNSYS HPS

from 40 kVA to 1.2 MVA

Hybrid Power Systems

Off-grid solution

new

The solution for

- Remote unelectrified locations
- Locations connected to a disturbed public power grid

Advantages

- Energy access in areas without a power grid
- Cost reduction linked to diesel consumption
- Maximization of diesel generator service life
- Reduction of CO_2 emissions

Certifications

MADE IN EUROPE

Reuse and optimization of the existing diesel generator

SUNSYS HPS adapts to the existing gen-set and limits its operation at reduced power.

This helps prevent premature wear and significantly reduces maintenance costs.

Simple and easy to install

Compact and centralized solution, the SUNSYS HPS is simple and quick to install.

The cost of its implementation is therefore significantly reduced.

Manufacturer's warranty for global solution

SOCOMEC designs and manufactures the SUNSYS HPS solution in its entirety: converter, AC and DC protection, main LV board.

This guarantees all-round system operation and performance.

Extensive power range up to 1.2 MVA

- The SUNSYS HPS standard solution is available for power ratings from 40 kVA to 200 kVA.
- Based on a parallelable modular architecture, it allows power scalability up to 1.2 MVA.
- Each model is composed of:
  - double conversion system (AC/DC and DC/AC converters),
  - PV charger system (DC/DC converter),
  - battery protection unit,
  - input/output electrical distribution panel.
- Additional equipment is available on request:
  - battery rack,
  - photovoltaic Field Boxes,
  - fully equipped shelter,
  - supervision and monitoring system.

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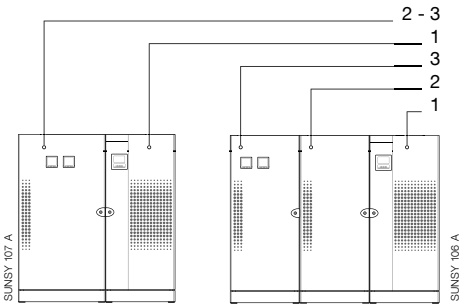
Technical data

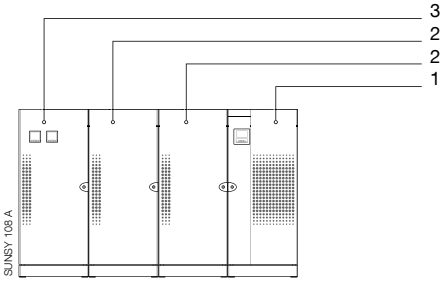
	SUNSYS HPS-40	SUNSYS HPS-60	SUNSYS HPS-80	SUNSYS HPS-100	SUNSYS HPS-120	SUNSYS HPS-160	SUNSYS HPS-200
AC output nominal power	40 kVA	60 kVA	80 kVA	100 kVA	120 kVA	160 kVA	200 kVA
AC active power	32 kW	48 kW	64 kW	80 kW	100 kW	128 kW	160 kVA
Parallel configuration(1)	Up to 6 units						
AC output voltage	380/400/415 VAC adjustable/3 phases + Neutral (± 1%)						
AC output frequency	50/60 Hz adjustable (± 0.2 Hz)						
THDV	< 2 %						
Crest factor	3:1						
Overload	125 % for 10 min/150 % for 1 min						
Max voltage of the PV production	900 VDC						
MPPT(2) voltage range of the PV production	480 to 900 VDC						
Max photovoltaic power(3)	30 kWp	80 kWp		160 kWp			240 kWp
Efficiency	94 %						
Battery configuration	From 174 to 192 Cells						
Battery type	Cyclic sealed lead or open vent						
Battery AC ripple current	< 0.1 C10						
Battery AC ripple voltage	< 2 %						
Max recharge current	Adjustable up to 20 % C10 in DC/DC converter						
Grid/Genset voltage	380/400/415 VAC/3 phases + Neutral (± 15%)						
Grid/Genset frequency	50/60 Hz (± 5 Hz)						
Operational temperature	0 °C to 40 °C depending on the model (25 °C for maximum battery life)						
Relative humidity	95 % without condensation						
Dimensions W x D x H	1800 x 845 x 1930 mm			2400 x 845 x 1930 mm			3200 x 845 x 1930 mm
Weight	990 kg			1460 kg		1540 kg	1840 kg
Degree of protection	IP20						

(1) Models from 240 kVA to 1.2 MVA on request. (2) Maximum Power Point Tracking.
(3) Different power outputs are available.

Configurations



40 - 60 - 80 kVA | 100 - 120 - 160 kVA

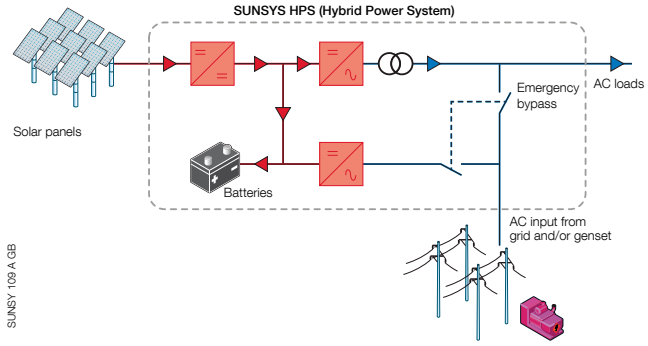


200 kVA

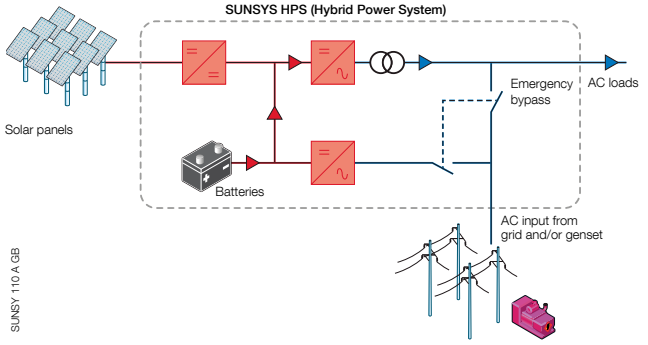
1. Double DC/AC converter
2. DC/DC converter
3. Input/output connections

Typical operating modes

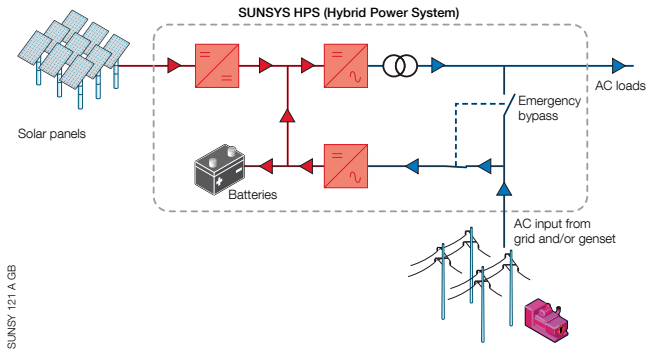
- PV mode (normal mode)



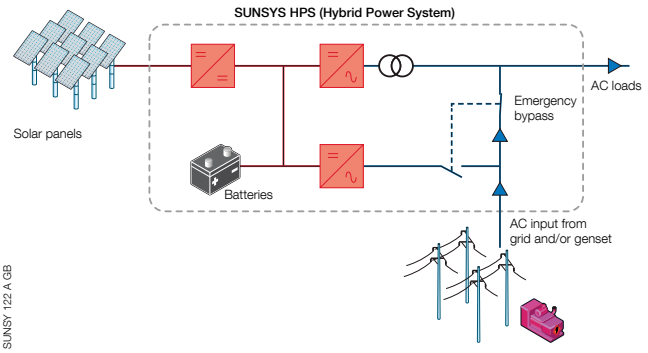
- Battery mode



- PV + GenSet mixed mode



- GenSet mode




ATEX

Protection

A photovoltaic installation is composed of photovoltaic modules, one or more inverters, and isolation and protection devices.

The SOCOMEC isolation and protection solutions provide:

- total safety during maintenance and in the event of fire or electrical shock,
- protection from reverse-current of the photovoltaic modules and surge voltages caused by lightning.

Depending on the photovoltaic module technology and the size of the installation, the isolation and protection devices can be integrated in cabinets or photovoltaic string control enclosures.

RJB enclosures

Photovoltaic string protection enclosures for residential (RJB) applications

From 1 to 2 strings / 1 to 2 MPPT / DC or DC / AC

RJB enclosure
DC/AC
2 Strings/2 MPPT

The solution for

> Residential applications

Main advantages

> A complete range for all your needs
> Simplicity of installation and use
> Installation safety
> Manufacturer's guarantee of reliability, services and safety

Conformity to standards[1]

> IEC 61439-3
> IEC 61439-2
> UTE C 15-712-1
> BT directive no. 2006/95/EC

Specific requests

> Contact SOCOMEC to request customized protection enclosures

Related products

> SUNSYS H30 inverter, page 16
> SUNSYS H50 inverter, page 18

Function

The RJB string enclosures allow:
- parallel connection, protection and isolation of the photovoltaic strings,
- connection to the photovoltaic inverter,
- AC distribution (DC/AC RJB enclosures),
- protection against overvoltage,
- operational safety.

Advantages

A complete range for all your needs
- From 1 to 2 strings.
- DC or DC/AC IP65 enclosures.
- From 600 to 1000 VDC.
- Isc STC (max) = 9 A/string.
- From 1 to 2 MPPT.

Simplicity of installation and use
- Transparent port for analysis of the protection components (fuses, breaker and surge protection devices).
- Pre-wired modular enclosure.
- Quick and safe connection for simplified installation.

Installation safety
- Insulation class II.
- Changeover and DC voltage isolation.
- Type II surge protection device.
- AC differential protection (30 mA in the DC/AC enclosure).
- Connection to PV connectors.

Manufacturer's guarantee of reliability, services and safety
- Guarantee of the design, qualification and production phases.
- Production according to current legislation.
- Production with SOCOMEC parts, specifically designed for photovoltaics.
- Electrical and mechanical characteristics according to standard IEC 61439-2[1].

(1) The applicability of the regulations depends on the country of installation and the product.

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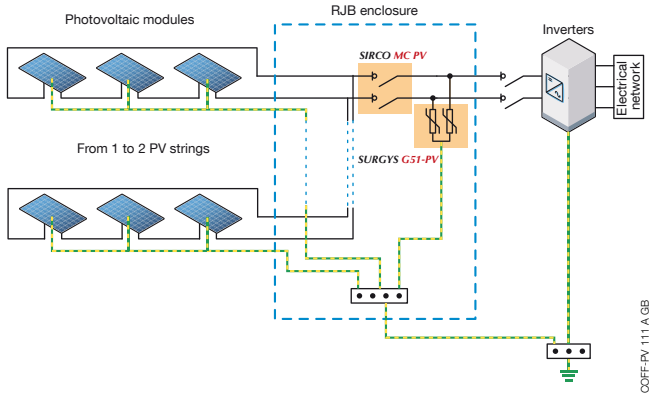
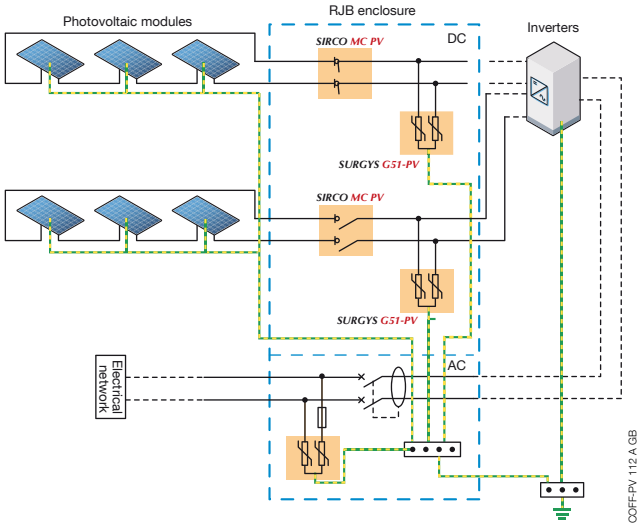
Functional diagram

DC enclosures



DC/AC enclosures

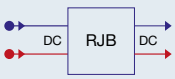
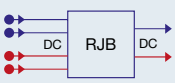
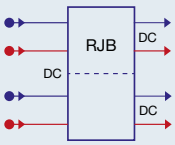


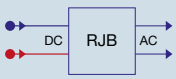
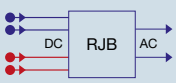
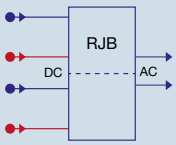
References

NUMBER OF STRINGS	MPPT NUMBER	VOLTAGE	DC CURRENT	DC RJB ENCLOSURE REFERENCE
1	1	600 VDC	25 A	34PV **6211**
2	1	600 VDC	25 A	34PV **6221**
2	2	600 VDC	25 A	34PV **6222**
1	1	1000 VDC	25 A	34PV **1211**
2	1	1000 VDC	25 A	34PV **1221**
2	2	1000 VDC	25 A	34PV **1222**

NUMBER OF STRINGS	MPPT NUMBER	VOLTAGE	DC CURRENT	AC CURRENT	AC-DC RJB ENCLOSURE REFERENCE
2	1	600 VDC	25 A	16 A	35PV **6221**
2	2	600 VDC	25 A	16 A	35PV **6222**
2	1	600 VDC	25 A	25 A	35PV **6321**
2	2	600 VDC	25 A	25 A	35PV **6322**
2	1	1000 VDC	25 A	16 A	35PV **1221**
2	2	1000 VDC	25 A	16 A	35PV **1222**
2	1	1000 VDC	25 A	25 A	35PV **1321**
2	2	1000 VDC	25 A	25 A	35PV **1322**

Configurations

TYPE OF ENCLOSURE	CONFIGURATION	DIAGRAM
RJB DC	1 PV string - 1 MPPT	
RJB DC	2 PV strings - 1 MPPT	
RJB DC	2 PV strings - 2 MPPT	

TYPE OF ENCLOSURE	CONFIGURATION	DIAGRAM
RJB DC/AC	1 PV string - 1 MPPT	
RJB DC/AC	2 PV strings - 1 MPPT	
RJB DC/AC	2 PV strings - 2 MPPT	

New configuration 3 x 4 strings/3 MPPT available (please contact SOCOMEC for information).

BJB enclosures

Photovoltaic string protection enclosures for building (BJB) applications

From 3 to 6 strings / 1 to 2 MPPT / DC

BJB enclosure
4 Strings / 1 MPPT

The solution for

> Building applications

Main advantages

> A complete range for all your needs
> Simplicity of installation and use
> Installation safety
> Manufacturer's guarantee of reliability, services and safety

Conformity to standards[1]

> IEC 61439-3
> IEC 61439-2
> UTE C 15-712-1
> BT directive no. 2006/95/EC

Specific requests

> Contact SOCOMEC to request customized protection enclosures

Related products

> SUNSYS B12 inverter, page 22
> SUNSYS B20E inverter, page 24
> SUNSYS B30 inverter, page 26

Function

The BJB string enclosures allow:
- parallel connection, protection and isolation of the photovoltaic strings,
- connection to the photovoltaic inverter,
- protection against overvoltage,
- operational safety.

Advantages

A complete range for all your needs
- From 3 to 6 strings.
- DC IP65 enclosures.
- From 600 to 1000 VDC.
- Isc STC (max) = 9 A / string.
- From 1 to 2 MPPT.

Simplicity of installation and use
- Transparent port for analysis of the protection components (fuses, breaker and surge protection devices).
- String fuse fault signal.
- Pre-wired modular enclosure.
- Quick and safe connection for simplified installation.

Installation safety
- Insulation class II.
- Safe access voltage surge protection devices (4 and 6 string versions).
- Changeover and DC voltage isolation.
- Protection of both polarities (+/-) with fuse.
- Type II surge protection device.
- Connection to PV connectors.

Manufacturer's guarantee of reliability, services and safety
- Guarantee of the design, qualification and production phases.
- Production according to current legislation.
- Production with SOCOMEC parts, specifically designed for photovoltaics.
- Electrical and mechanical characteristics according to standard IEC 61439-2[1].

(1) The applicability of the regulations depends on the country of installation and the product.

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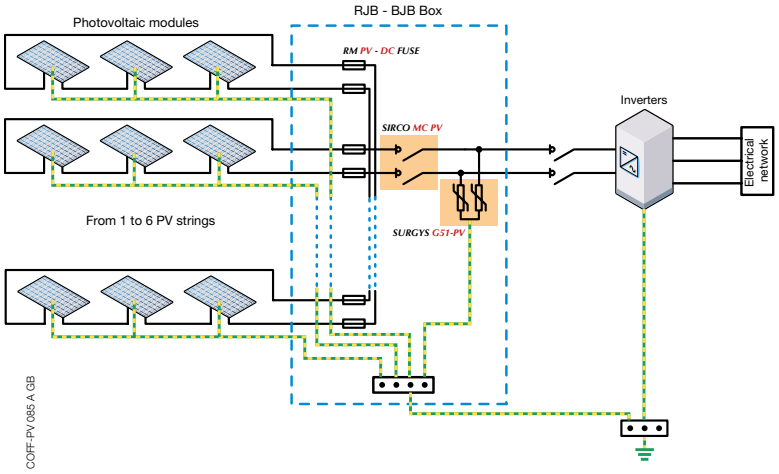
Functional diagram

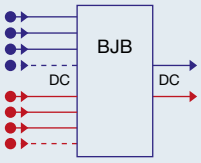
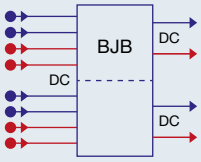
DC enclosures

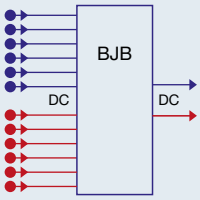
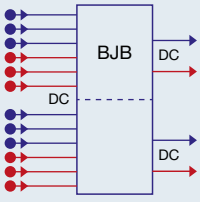


References

NUMBER OF STRINGS	MPPT NUMBER	VOLTAGE	DC CURRENT	DC BJB ENCLOSURE REFERENCE
3	1	600 VDC	40 A	36PV 6431
4	1	600 VDC	40 A	36PV 6441
4	2	600 VDC	25 A	36PV 6242
3	1	1,000 VDC	40 A	36PV 1431
4	1	1,000 VDC	40 A	36PV 1441
4	2	1,000 VDC	25 A	36PV 1242
6	1	1,000 VDC	80 A	36PV 1661
6	2	1,000 VDC	40 A	36PV 1462

Configurations

TYPE OF ENCLOSURE	CONFIGURATION	DIAGRAM
BJB DC	3/4 PV strings - 1 MPPT	
BJB DC	4 PV strings - 2 MPPT	

TYPE OF ENCLOSURE	CONFIGURATION	DIAGRAM
BJB DC	6 PV strings - 1 MPPT	
BJB DC	6 PV strings - 2 MPPT	

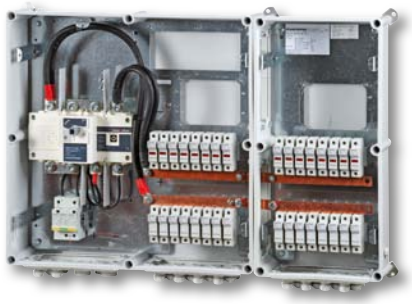
FJB/IFB enclosures

Photovoltaic string protection and monitoring enclosures for solar parks

from 8 to 32 strings

COFF-PV 018 A

16-string enclosure



COFF-PV 023 B

16-string enclosure

The solution for

> High-power photovoltaic installations (large buildings, fields, solar parks ranging from a few hundred kW to many MW)

Main advantages

> A complete range to meet your needs
> Simplicity of installation and use
> Installation safety
> Manufacturer's guarantee of reliability, services and safety

Conformity to standards

> IEC 61,439-2
> UTE C 15-712-1
> BT Directive no. 2006/95/EC

Specific requests

> Contact SOCOMEC to request customized protection enclosures

Related products

> SUNSYS P33TR-P66TR inverter, page 28
> SUNSYS P100TR inverter, page 30
> SUNSYS P66TL/P100TL/P66TL/1K-P100TL1K inverter, page 34

Function

The FJB/IFB string enclosures allow:

- parallel connection, protection and isolation of the photovoltaic strings,
- connection to the photovoltaic inverter,
- protection against overvoltage,
- monitoring of the strings and photovoltaic installation.

Advantages

A complete range to meet your needs

- From 1 to 32 strings.
- Changeover and manual or remote isolation.
- 1000 VDC voltage.
- IMPPT max = 9 A/String.
- Use at temperatures of up to 60 °C (see table of technical specifications).

Simplicity of installation and use

- Fault signal of string fuse.
- Closing plate fitted on a removable base for input/output connection.
- Connection to PV connectors (optional).
- Accessories for wall mounting.
- Roof for protection in harsh environments (contact SOCOMEC).
- Remote monitoring (available on IFB enclosures).

Installation safety

- Insulation class II.
- Changeover and DC voltage isolation (1000 V DC21).
- Protection of both polarities (+/-) with fuse.
- Type II surge protection device.
- Polarity separation according to legislation.
- Route and fixing of safety cables with reinforced insulation.

Manufacturer's guarantee of reliability, services and safety

- Guarantee of the design, qualification and production phases.
- Production according to current legislation.
- Production with Socomec parts, specifically designed for photovoltaics.
- Electrical and mechanical characteristics according to standard IEC 61439-2.

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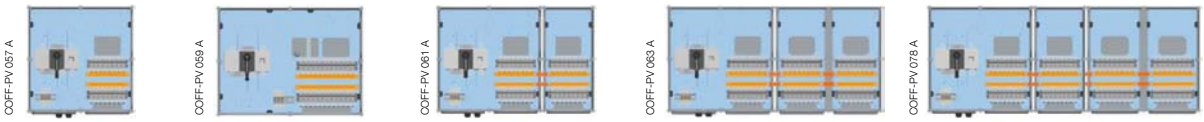
General description

The FJB/IFB range is designed with a modular architecture comprising:

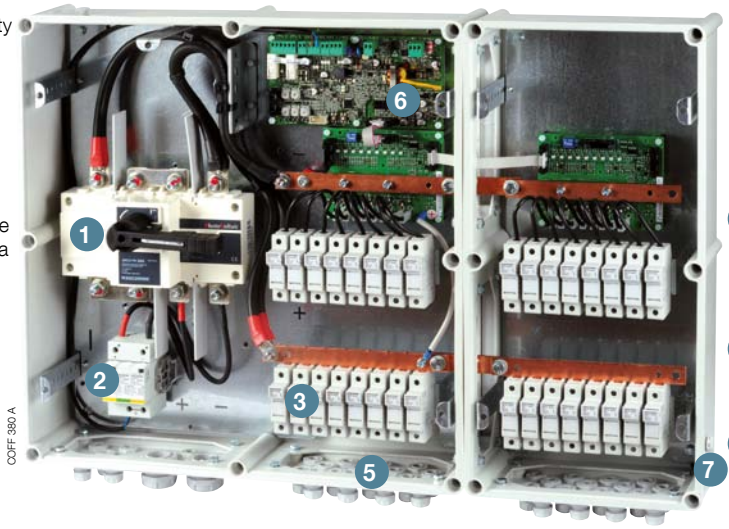


8 strings *12 strings* *16 strings* *24 strings* *32 strings*

1. Opening and manual or remote isolation with isolator to allow maintenance or safety operation procedures.

2. Protection against overvoltage from atmospheric phenomena (lightning) with type 2 SURGYS G51-PV.

3. - Connection of the strings on the PV RM fuse isolator.
   - gPV protection fuse (10 x 38) for the photovoltaic string.



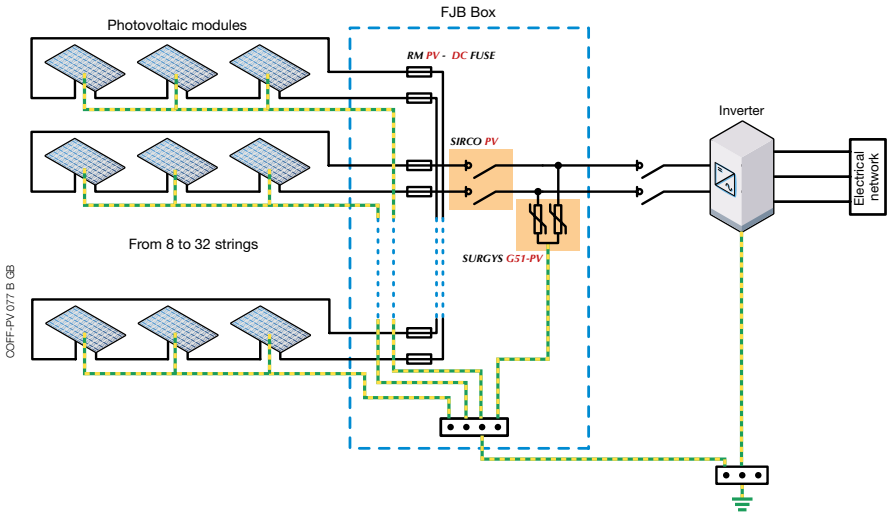
4. Fault signal of RM PV string fuse (FJB version without monitoring).

5. Closure plate with cable glands (optional with PV connectors, contact SOCOMEC).

6. Monitoring and sensing PCBs (consult us).

7. - Polyester enclosure IP65, IK09
   - Colour RAL 7035
   - Mounting support on wall bracket
   - Safety stickers

Functional diagram



FJB/IFB enclosures

Photovoltaic string protection and monitoring enclosures for solar parks

Enclosed products and solutions

References

Manual control and load break

DESCRIPTION	VOLTAGE (VDC)	CURRENT (A)	REFERENCE
8 strings	1000	160	SUNSYS-PFB-8M
12 strings	1000	160	Contact SOCOMEC
16 strings	1000	200	SUNSYS-PFB-16M
24 strings	1000	320	SUNSYS-PFB-24M
32 strings	1000	400	Contact SOCOMEC

Remote control and load break

DESCRIPTION	VOLTAGE (VDC)	CURRENT (A)	REFERENCE
8 strings	1000	160	SUNSYS-PFB-8R(1)
12 strings	1000	160	Contact SOCOMEC
16 strings	1000	200	SUNSYS-PFB-16R(1)
24 strings	1000	320	SUNSYS-PFB-24R(1)
32 strings	1000	400	Contact SOCOMEC

(1) Release coil not included (see accessories).

Manual control and load break

DESCRIPTION	VOLTAGE (VDC)	CURRENT (A)	REFERENCE
8 strings	1000	160	SUNSYS-IFB-8M
16 strings	1000	200	SUNSYS-IFB-16M
24 strings	1000	320	SUNSYS-IFB-24M

Remote control and load break

DESCRIPTION	VOLTAGE (VDC)	CURRENT (A)	REFERENCE
8 strings	1000	160	SUNSYS-IFB-8R(1)
16 strings	1000	200	SUNSYS-IFB-16R(1)
24 strings	1000	320	SUNSYS-IFB-24R(1)

(1) Release coil not included (see accessories).

Accessories

gPV fuse 10 x 38

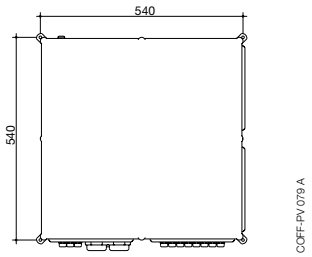
SIZE	REFERENCE
Size from 2 to 16 A	Contact SOCOMEC

Release coils

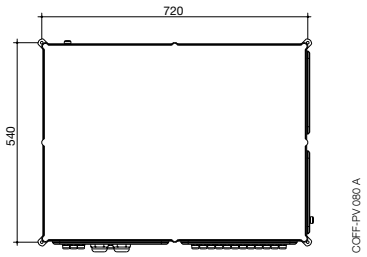
DESCRIPTION	REFERENCE
No-volt release coil 208-240 V / 50-60 Hz	SUN-OP-UV230VAC
Shunt release coil 208-250 VAC / DC	SUN-OP-ST230VAC

Dimensions

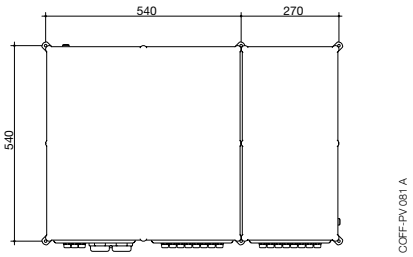
8 strings



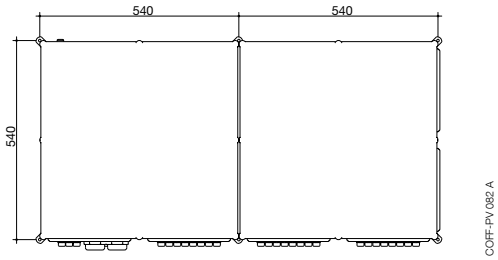
12 strings



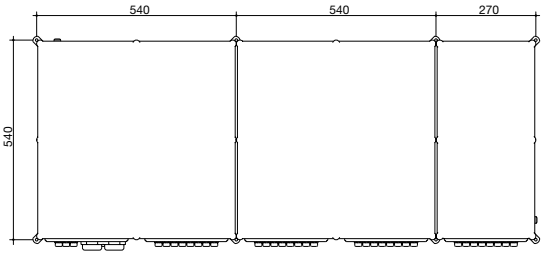
16 strings



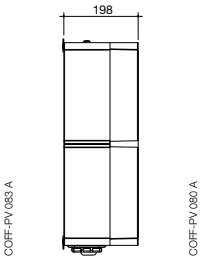
24 strings



32 strings



Side view (all versions)



socomec Innovative Power Solutions

Technical data(1)

	SUNSYS IFB/FJB 8 strings	SUNSYS IFB/FJB 16 strings	SUNSYS IFB/FJB 24 strings
ELECTRICAL SPECIFICATIONS			
Open-circuit voltage (STC Voc)	1,000 VDC max		
Overvoltage protection	PV 40 kA 8/20 surge protection devices in modules to be inserted		
Emergency disconnect device	1000 VDC 160 A	1000 VDC 200 A	1000 VDC 320 A
Impulse resistance voltage	8 kV		
Maximum current per string	10 A		
Fuse	2/4/6/8/10/12/16 A (specify on ordering)		
Signalling contacts	XB1 (detection of overvoltage/excess temperature)/ XB2 (string fault), 250 VAC 5 A		
MECHANICAL SPECIFICATIONS			
Size of input cable	ø 4-6 mm²		
Size of output cable	ø 35-120 mm²	ø 95-120 mm²	ø 120-240 mm²
Protection class	Class 2		
Degree of protection	IP65		
Impact resistance	IK09		
Dimensions (L x D x H)	540 x 201 x 540 mm	810 x 201 x 540 mm	1080 x 201 x 540 mm
Weight	17 kg	26 kg	38 kg
MONITORING SYSTEM (IFB only)			
Voltage	24 VDC (12 to 27 VDC)		
Absorption	Nominal: 1.5 W, maximum: 3 W		
Level of power voltage	SELV (Safety Extra Low Voltage)		
COMMUNICATION (IFB only)			
Alarm data and output	Through RS485		
Distance of communication	Up to 500 m		
Number of nodes (serial connections)	From 1 to 254		
ENERGY SUPPLY OF SUNSYS GUARDIAN BOARD (IFB only)			
Absorption	0.7 W		
ENVIRONMENT			
Temperature range	From -20 °C to +40 °C without derating		
Storage temperature	From -20 °C to +70 °C (1 year maximum)		
Relative humidity/Altitude	95 % without condensation at 40 °C/2000 m		
STANDARDS			
Low voltage boxes	IEC 61439-2 (Edition 2; 2011)		
Photovoltaic system installation guide	UTE C 15-712-1		
EU conformity	Low voltage directive 2006/95/EC, electromagnetic compatibility directive 2004/108/EC		

(1) For technical data on 12-string and 32-string models, contact Socomec.

SUNSYS Guardian (IFB only)

Thanks to a fibre optic ring, the optional SUNSYS Guardian board constantly checks for any attempts to remove the photovoltaic panels.

If the fibre optic ring, installed as a single unit with the photovoltaic panel structure to be protected, is cut or tampered with, an alarm is immediately sounded.

The alarm signal is transmitted in three ways:

- RS485 serial communication,
- dry signalling point,
- variation in resistance for the connection to the alarm control unit.

The board supports up to three fibre optic rings.

Monitored data

- Instantaneous power.
- VDC string voltage.
- I_{DC} current for each string and total output current.
- Power (Wh) generated each day per string.
- Status of the alarms, fuses and protective devices.

Load-break switches
SIRCO PV

The use of dedicated switches is necessary to ensure electrical disconnection during maintenance operations or for cutting off the power in emergencies involving fire or electric shock.

These components must be installed in accordance with the architecture at each operational level. When disconnecting a photovoltaic string or the DC side of an inverter, only SIRCO PV devices are capable of:

- isolating the high DC voltages that occur in this context,
- disconnecting, under loads of thousands of volts and in total safety, the high DC currents that vary according to daily solar radiation.

SIRCO MC PV 25 and 40 A

Function

SIRCO MC PV devices are manually operated multipolar load break switches. They ensure opening/closing under load and safely disconnect any low voltage electrical circuit for PV systems.

Compliance with standards

- IEC 60947-1.
- IEC 60947-3.
- IEC 60364-7-712, NF C 15-100 and UTE C 15-712-1 Guideline.
- IEC 60364-4-410.
- UL 508i.

General characteristics

- Modular and flexible device.
- Multiple PV circuit: interruption of two strings under higher voltage using a simple compact switch.
- AC/DC device for complete isolation of the inverter thanks to the simultaneous cut-off of the DC current input and AC current output.
- Fully visible opening.
- Double break per phase with arc fragmentation system.
- Rail mounting, panel or modular panel with 45 mm front cut-out.
- 600 and 1000 VDC versions.

SIRCO MV PV 63 to 100 A - 1000 VDC

Function

SIRCO MV PV devices are manually operated multipolar load break switches.
They ensure opening/closing under load and safely disconnect any low voltage electrical circuit for PV systems.

Compliance with standards

- IEC 60947-3.
- EN 60947-3.
- VDE 0660-107 (1992).
- IEC 60364-4-410, IEC 60364-7-712, NF C 15-100 and UTE C 15-712-1 Guideline.

General characteristics

- Modular device.
- Fully visible opening.
- Rail mounting, panel or modular panel with 45 mm front cut-out.
- Up to 1000 VDC.

SIRCO PV UL98B and IEC 60947-3 - 100 to 2000 A - Up to 1500 VDC

Function

SIRCO PV are manually operated multipole load break switches. They make and break on load and provide safety isolation for any PV circuit up to 1500 VDC. SIRCO PV are extremely durable switches that have been tested and approved for use in the most demanding environments. They have been designed and tested for all types of applications such as earthing, floating or bipolar.

Compliance with standards

- IEC 60947-3.
- EN 60947-3.
- VDE 0660-107 (1992).
- IEC 60364-4-410, IEC 60364-7-712, NF C 15-100 and UTE C 15-712-1 Guideline.
- UL98B Guide WHVA, file E346418.
- CSA C22.2#4, Class 4651-02, file 112964.
- NEC Art 690 Issue 2011.

General characteristics

- Back-to-back double load-break switch up to 1500 VDC.
- Patented switching technology.
- Positive break indication.
- Up to 1000 VDC as per characteristics by UL98B.
- Up to 1500 VDC as per characteristics by IEC 60947-3.
- Suitable for use in accordance with NEC art. 690 2011 issue.

SIRCO MOT PV 200 to 630 A

Function

SIRCO MOT PV devices are multipolar load-break switches.

They ensure opening/closing under load and safely disconnect any low voltage electrical circuit for PV systems.

Compliance with standards

- IEC 60947-3.

General characteristics

- 2 stable positions (I, 0).
- Fully visible disconnection.
- AUTO/MANU operating modes.
- Padlocking in position 0 (I optional).
- Up to 1000 V DC.
- IP20 devices and accessories.
- SIRCO MOT PV have up to 3 and 4 poles from 200 to 630 A.
- SIRCO MOT PV have a manual emergency command.

SIRCOVER PV 200 to 630 A

Function

SIRCOVER PV devices are manually operated changeover switches.

They ensure source inversion or changeover under load of two photovoltaic installation circuits.

Compliance with standards

- IEC 60947-3.

General characteristics

- 3 stable positions (I, 0, II) with changeover under load.
- Fully visible disconnection.
- Up to 1000 VDC.
- IP20 devices and accessories.
- On models with 3 stable positions (I-0-II), the SIRCOVER PV devices are 3 or 4-pole from 200 to 630 A. They can be fitted in steel or polyester enclosures.
- SIRCOVER PV devices are available with direct front or external operation.

SIRCO PV PA 100 to 800 A

new

Function

Dedicated to roof PV installations, the SIRCO PV PA (Pneumatic actuator for fire safety) are PV switch disconnectors actuated by a pneumatic cylinder.

The energy for the actuator can be a compressed air cartridge and/or a secured compressed air network, avoiding the use of sensitive coils with poor reliability.

The SIRCO PV PA ensures safe on-load breaking and making to provide safe isolation of PV circuits.

Compliance with standards

- IEC 60947-3.
- UTE C 15-712-1/-2.
- NF S 61-937 (actionneur sécurité incendie).

General characteristics

- Power supply can be provided by CO_2 cartridge, compressed air network or both working together.
- It can be used in combination with the fire system's pneumatic skydome, using the same air nework.
- Manual or motorized operating modes, local or remote control, single or multiple actuations.
- Operating pneumatic pressure from 6 to 12 bars.
- Wide operating temperature from -10 °C to +70 °C.
- On-off positions available even in the absence of pneumatic power supply (direct handle factory mounted).
- Similar operation as the smoke extraction systems.
- Up to 1000 VDC.

Fuses, PV fuse bases

RM PV 20 to 50 A

Function

RM PV are disconnectors with unipolar or bipolar modular fuses for 10 x 38 and 14 x 51 cylindrical fuses. They ensure safe disconnection and protection against overcurrents in all PV electrical circuits on the DC current side.

RM: fuse bases without signalling for fuses without striker.

Compliance with standards

- IEC 60947-3.
- IEC 60269-2-1.
- IEC 60269-1.
- IEC 60269-2.
- NF EN 60269-1.
- NF C 63-210.
- NF C 63211.
- VDE 0636-10.
- DIN 43620.

General characteristics

- Rated voltage 1000 VDC.
- Multipolar and simultaneous disconnection.
- High dielectric withstand.
- Modular DIN 45 mm cut-out.
- Self-extinguishing thermoplastic material.
- High-capacity connection.

PV 32 to 600 A fuse bases

Function

SOCOMEC fuse bases are fixed, unipolar or multipolar supports for knife-edge fuses.

Compliance with standards

- IEC 60269.
- NF EN 60269-1.
- VDE 0636-10.
- DIN 43620.

General characteristics

- High dielectric withstand.

gPV fuses 1 to 600 A

Function

SOCOMEC PV fuses protect the system against inverse overcurrents that can occur in photovoltaic installations. They are available in both cylindrical and blade form.

Compliance with standards

- IEC 60269-6.
- IEC 60269-1.
- IEC 60269-2.
- NF EN 60269-1.
- VDE 0636-10.

Performance

- Breaking capacity up to 1000 VDC.
- Extensive operating range, suitable for the small over-currents typical of PV installations.
- Simple, reliable discrimination.

Reliability

- Total protection over time guaranteed by its simple, reliable design and operation (Joule effect).

Safety

- The energy released during a short circuit is contained within the sealed fuse cartridge.

SURGYS PV
Surge protection devices

Photovoltaic panels and inverters account for a sizeable proportion of total investment.
Depending on its architecture, the surface of a photovoltaic field can act as a large antenna and can easily capture potentially damaging overvoltages in a storm.
The use of SURGYS surge protection device, specially designed for PV installations, can reduce this risk considerably.

The specific design of these surge protective devices makes them fully capable of controlling the discharge of the transient current after a strike and disconnecting the DC currents, even at end of life.

The specific PV surge protective devices protect the panels and inverters against overvoltages of atmospheric origin.

SURGYS G51-PV

Function

SURGYS G51-PV surge Protective Device is designed to ensure protection for photovoltaic networks against atmospheric and transient overvoltages.
They are compliant with test requirements of UTE 61-740-51 and EN 50539-11 as well as with installation requirements UTE C 15-712-1.

Compliance with standards

- Compliant with test guide UTE C61-740-51 and EN 50539-11.
- Compliant with installation guide UTE C15-712-1 (2010).

General characteristics

- Type 2 Surge Protective Device.
- Bi-polar protection of the networks from 500 VDC to 1500 VDC.
- Maximum discharge current 40 kA.
- Monobloc base.
- Common and differential protection modes.
- Short circuit current withstand (Iscwpv) of 1000 A eliminates the need for any additional fuse protection.
- Plug-in remote signalling contacts (according to model).
- End of service life indicator.
- Plug-in modules.

SURGYS D40

Function

The SURGYS D40 surge arrester is designed to ensure protection of LV distribution AC circuits and equipment against transient overvoltages.
It acts against industrial operation overvoltages (switching operations, fuse melting, etc.) as well as against effects of a lightning strikes.

Compliance with standards

- NF EN 61643-11 Class 2 tests.
- IEC 61643-11 Class 2.

General characteristics

- Type 2 Surge Protective Device.
- Maximum discharge current 40 kA.
- Common and differential protection modes (according to model and neutral system).
- Monobloc base.
- Plug-in remote signalling contacts.
- End of service life indicator.
- Plug-in modules.


mpianto: Roof - Potenza di picco dell'impianto: 173,82 kWp - Cliente: SOCOMEC - Impianto attivo dal: 03-08-2010
635 W/m2
S◊SB-A »
Irraggiamento
353 C°
S◊SB-A »
Temperatura
ambiente
Energia totale prodotta - inverter:
Energia totale
377.707,00 kWh
Energia prodotta giornaliera - inverter:
Energia totale
769,00 kWh
Barili di petrolio:
Alberi equivalenti:
CO2 evitata:
Inverter collegati:
Contatori collegati:
Stringhe collegate:
Numero SMS configurati:
250 - Numero SMS inviati:
Data ultimo aggiornamento:
15:25 - 31/07
otenza attiva AC
Tempo: seleziona
Dal: 31/07/2012
al: 31/07/2012
Dalle: 05:00
Alle: 20:00
Elabora
Zoom:
nto - Valore massimo: 94,78 kW - Valore minimo: 0 kW
Potenza attiva AC - Valore massimo: 136,20 kW - Valore minimo: 0 kW
s.com
12:00
18:00
12:00
18:00

Supervision

Photovoltaic installations require constant monitoring of the energy production and operational parameters. SOCOMEC provides different monitoring solutions according to the PV inverter and the power of the plant.

The **SUNGUARD** monitoring system is compatible with all SUNSYS P inverters and allows:

- monitoring of the photovoltaic plant with a PC or mobile device (tablet, smartphone, etc.) with an Internet connection and browser,
- checking of the daily production, the profitability of the plant and the contribution to environmental protection,
- reduction of production downtime.

The **PV MONITOR** allows the local monitoring of the SUNSYS H50 and SUNSYS B inverters via a PC.

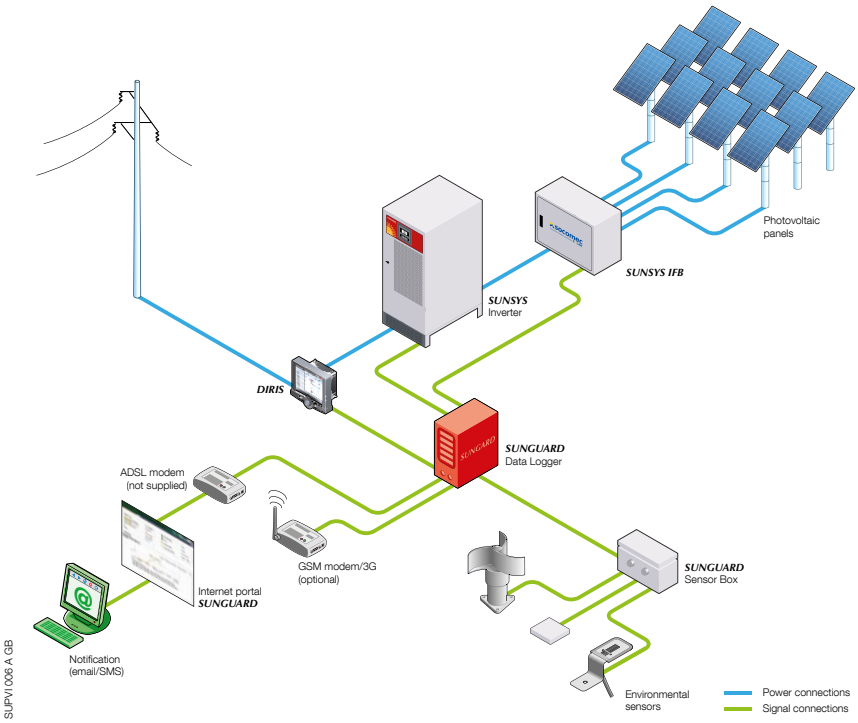
'WiFi ad Hoc' protocol, specifically designed for SUNSYS H30i, SUNSYS H30 and SUNSYS H30+30i inverters, allows the inverter to communicate with PC, tablet or smartphone via a wireless communication interface with integrated web server (available as an option).

The **DIRIS** supervision system allows a complete supervision of the PV plant to guarantee the installation's overall operating efficiency.

SUNGUARD system

SUNGUARD monitoring devices

- Data logger: this is the centre of the monitoring facility, collecting installation data and sending the data to the SUNGUARD server to be viewed on the browser.
- Power supply, surge protection device and switchboard.
- Environmental sensors for the calculation of the theoretical power of the photovoltaic installation (power at maximum efficiency) and comparison with the real power generated by identifying malfunctions or system failure.
- Networking: connection of the monitoring system to the SUNGUARD server.
- LED or LCD display to view the information related to energy production in real time.



Benefits of SUNGUARD monitoring

- Simplicity of installation and use.
- Monitoring of all the devices on the photovoltaic installation.
- Reduction of maintenance time and troubleshooting.

APP for iPhone and iPad

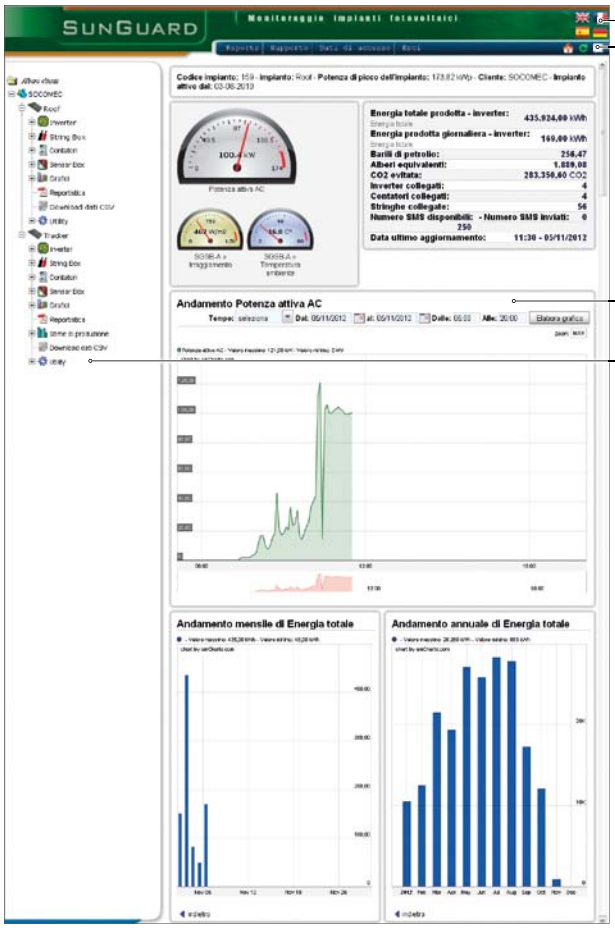
The SUNGUARD application enables the monitoring of many PV installations via iPhone and iPad allowing the following parameters to be viewed:

- daily, weekly, monthly and annual energy produced,
- ideal daily production,
- theoretical production,
- CO_2 emissions avoided,
- number of barrels of oil,
- total energy produced,
- number of trees saved,
- activation date.

The SUNGUARD mobile application is available for free on iTunes AppStore.

socomec Innovative Power Solutions

SUNGUARD portal web interface



SUPVI 007 A

1. Interface language

For setting the interface language to either English, French, Italian, Spanish or German (for other languages, contact SOCOMEC).

2. CONTENTS area

For viewing selected information through the navigation tree icons.

3. Horizontal navigation bar

- 'Graphs' button:
  For viewing the graphs related to the main installation parameters (e.g. kWh, sunlight, etc.) selected over a chosen period of time.
- 'Support' button:
  For sending and receive technical support messages.
- 'Report' button:
  For creating monthly or yearly reports (PDF) of the energy production.

4. Navigation tree

The navigation tree consists of icons organised on three levels.

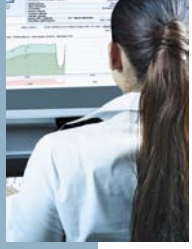
The main level (level 1) is represented by the installation icon, allowing the following parameters to be viewed in the contents area:

- instantaneous power produced by the inverters in kW,
- power surge in kWp,
- total energy accumulated by the inverters in kWh,
- total energy of the counter,
- sunlight in W/m^2, module temperature, ambient temperature and wind speed,
- CO_2 emissions avoided, number of trees saved and equivalent number of barrels of oil,
- daily production and theoretical production graphs,
- comparison of production estimations with real production.

Level 2 allows access to information related to:

- each active photovoltaic device (SUNSYS inverter, SUNGUARD SENSOR BOX, SUNGUARD communication devices, SUNSYS IFB field boxes, electricity meters, DIRIS network analysers, etc.), in order to view the main electrical values,
- information related to Alarms and Events and related notifications (Messages) sent via email and/or SMS,
- viewing of the values of all monitored parameters, selected over a chosen period of time, and exportation of values in CSV format.

  The Utility Section, which allows access to level-3 information, includes:
  - monitoring of the photovoltaic installation, to activate and modify the monitoring parameters,
  - monitoring of the photovoltaic strings, to set up the maximum gap in production percentages between each individual string. If the current values are less than the established threshold, the system sends an alert message,
  - calculation of sunlight, to calculate the average daily sunlight (W/m^2) selected over a chosen period of time.



Communication interfaces

Datalogger SUNGUARD BOX HOME 20K 1PV

SUNSY 018 A

Application

- For photovoltaic installations of up to 20 kWp with one inverter.

Operation

- Reads data from the inverter.
- Reads data from the connected communication devices.
- Sends data to the SUNGUARD Internet portal via the ADSL router/modem (Ethernet port) or UMTS/3G SUNGUARD router/modem. The Reserved Area of the portal can be accessed with any Web Browser and an Internet connection, to monitor and analyse all the photovoltaic installations fitted with the SUNGUARD datalogger.

Specifications

- Ethernet interface.
- 2 RS232 serial ports.
- RS232/RS485 signal converter.
- Power supply included.
- 4 Gb CompactFlash with pre-installed software to manage the monitoring system.
- Dimensions (L x D x H): 115 x 35 x 155 mm.
- Weight: 0.5 kg.
- Operating temperature: +5 to +50 °C.

Datalogger SUNGUARD BOX HOME 20K 1PV WIFI

SUPVI 008 A

Application

- For photovoltaic installations of up to 20 kWp with one inverter.

Operation

- Reads data from the inverter.
- Reads data from the connected communication devices.
- Sends data to the SUNGUARD V Internet portal via the ADSL router/modem with WiFi connection. The Reserved Area of the portal can be accessed with any Web Browser and an Internet connection, to monitor and analyse all the photovoltaic installations fitted with the SUNGUARD datalogger.

Specifications

- Ethernet and WLAN interface.
- 2 RS232 serial ports.
- RS232/RS485 signal converter.
- Power supply included.
- 4 Gb CompactFlash with pre-installed software to manage the monitoring system.
- Dimensions (L x D x H): 115 x 35 x 155 mm.
- Weight: 0.5 kg.
- Operating temperature: +5 to +50 °C.

Datalogger SUNGUARD BOX HOME 20K

SUPVI 008 A

Application

- For photovoltaic installations of up to 20 kWp with an unlimited number of inverters.

Operation

- Reads data from the inverter.
- Reads data from the connected communication devices.
- Sends data to the SUNGUARD Internet portal via the ADSL router/modem (Ethernet port) or UMTS/3G SUNGUARD router/modem. The Reserved Area of the portal can be accessed with any Web Browser and an Internet connection, to monitor and analyse all the photovoltaic installations fitted with the SUNGUARD datalogger.

Specifications

- Ethernet interface.
- 2 RS232 serial ports.
- RS232/RS485 signal converter.
- 3 USB ports.
- Power supply included.
- 4 Gb CompactFlash with pre-installed software to manage the monitoring system.
- Dimensions (L x D x H): 115 x 35 x 155 mm.
- Weight: 0.5 kg.
- Operating temperature: +5 to +50 °C.

Datalogger SUNGUARD BOX HOME 20K WiFi

SUPVI 008 A

Application

- For photovoltaic installations of up to 20 kWp with an unlimited number of inverters.

Operation

- Reads data from the inverter.
- Reads data from the connected communication devices.
- Sends data to the SUNGUARD V Internet portal via the ADSL router/modem with WiFi connection. The Reserved Area of the portal can be accessed with any Web Browser and an Internet connection, to monitor and analyse all the photovoltaic installations fitted with the SUNGUARD datalogger.

Specifications

- Ethernet and WLAN interface.
- 2 RS232 serial ports.
- RS232/RS485 signal converter.
- Power supply included.
- 4 Gb CompactFlash with pre-installed software to manage the monitoring system.
- Dimensions (L x D x H): 115 x 35 x 155 mm.
- Weight: 0.5 kg.
- Operating temperature: +5 to +50 °C.

Datalogger SUNGUARD BOX SMALL 100K

SUPVI 009 A

Application

- For photovoltaic installations of up to 100 kWp.

Operation

- Reads from the inverter.
- Reads data from the connected communication devices.
- Sends data to the SUNGUARD Internet portal via the ADSL router/modem (Ethernet port) or UMTS/3G SUNGUARD router/modem. The Reserved Area of the portal can be accessed with any Web Browser and an Internet connection, to monitor and analyse all the photovoltaic installations fitted with the SUNGUARD datalogger.

Specifications

- Ethernet interface.
- 1 RS232 serial port and 3 RS485 serial ports to monitor the different types of equipment (for example: inverter, electricity meter, one or more SUNGUARD Sensor Boxes, and SOCOMEC IFB field boxes).
- 24 VDC power supply not included.
- 4 Gb CompactFlash with preinstalled software to manage the monitoring system.
- Aluminium enclosure.
- Installation on DIN rail or on wall.
- Dimensions (L x D x H): 189 x 41 x 130.6 mm.
- Weight: 1.5 kg.
- Operating temperature: -20 to +65 °C.

Communication interfaces

Datalogger SUNGUARD BOX PROFESSIONAL 3 300K

SUPV1 010 A

Application

- For photovoltaic installations of up to 300 kWp.

Operation

- Reads data from the inverter.
- Reads data from the connected communication devices.
- Sends data to the SUNGUARD Internet portal via the ADSL router/modem (Ethernet port) or UMTS/3G SUNGUARD router/modem. The Reserved Area of the portal can be accessed with any Web Browser and an Internet connection, to monitor and analyse all the photovoltaic installations fitted with the SUNGUARD datalogger.

Specifications

- Ethernet interface.
- 1 RS232 serial port and 3 RS485 serial ports to monitor the different types of equipment (for example: inverter, electricity meter, one or more SUNGUARD Sensor Boxes, and SOCOMEC IFB field boxes.)
- Communication port status via LED indicators.
- 24 VDC power supply not included.
- 4 Gb CompactFlash with pre-installed software to manage the monitoring system.
- Aluminium enclosure.
- Installation on DIN rail or on wall.
- Dimensions (L x D x H): 71 x 139 x 152 mm.
- Weight: 1.0 kg.
- Operating temperature: -20 to +75 °C.

Datalogger SUNGUARD BOX BUSINESS 2 > 300K

SUPV1 011 A

Application

- For photovoltaic installations > 300 kWp.

Operation

- Reads data from the inverter.
- Reads data from the connected communication devices.
- Sends data to the SUNGUARD Internet portal via the ADSL router/modem (Ethernet port) or UMTS/3G SUNGUARD router/modem. The Reserved Area of the portal can be accessed with any Web Browser and an Internet connection, to monitor and analyse all the photovoltaic installations fitted with the SUNGUARD datalogger.

Specifications

- Specifically for industrial environments.
- High-speed data processing.
- Ethernet interface.
- 2 RS232 serial ports and 4 RS485 serial ports to monitor different types of equipment (for example: inverter, electricity meter, one or more SUNGUARD Sensor Boxes, SOCOMEC IFB field boxes and dry contact modules).
- 24 VDC power supply not included.
- 1 GB RAM
- 4 Gb CompactFlash with pre-installed software to manage the monitoring system.
- Aluminium enclosure.
- Installation on DIN rail or on wall.
- Dimensions (L x D x H): 264.5 x 69.2 x 137.25 mm.
- Weight: 2.0 kg.
- Operating temperature: -20 to +60 °C.

Power supply: switchboard with surge protection device

POWER SUPPLY DIN 24 V 60 W

SUPVI 012 A

Specifications

- Input voltage: 230 VAC.
- Frequency range: 50-60 Hz.
- Output voltage: 24 V.
- Rated output current: 2.5 A.
- Rated output power: 60 W.
- Overload: 105-160% rated output power.
- Protection: limitation of constant current, automatic recovery on reactivation of normal operating conditions.
- Operating temperature: -20 to +60 °C.
- Humidity: 20 to 90% without condensation.
- Installation on DIN rail.
- Dimensions: 78 x 93 x 56 mm.
- Weight: 0.3 kg.

Switchboard IP65 8 modules: power supply, data line overvoltage discharge, magnetothermal switch

SUNSY 019 B

Switchboard specifications

- Switchboard 8 modules.
- Protection IP65.
- Dissipated power: 16 W.
- Colour: grey RAL 7035.
- Dimensions (L x D x H) 215 x 100 x 210 mm.

Power supply specifications

- Input voltage: 230 VAC.
- Frequency range: 50-60 Hz.
- Output voltage: 24 V.
- Rated output current: 2.5 A.
- Rated output power: 60 W.
- Overload: 105-160% rated output power.
- Protection: limitation of constant current, automatic recovery on reactivation of normal operating conditions.
- Operating temperature: -20 to +60 °C.
- Humidity: 20 to 90% without condensation.
- Installation on DIN rail.
- Dimensions: 78 x 93 x 56 mm.
- Weight: 0.3 kg.

Data line surge protection device specifications

- Network rated voltage: 6 V.
- Maximum network voltage: 8 V.
- Level of Protection: 25 V.
- Rated discharge current: 5 kA.
- Maximum discharge current: 20 kA.
- Current impulse: 5 kA.
- Installation on DIN rail.
- Dimensions (L x D x H) 18 x 68 x 90 mm.
- Earth connection: clamps and DIN rail.
- Clamp section: 0.4-1.5 mm^2.

Magnetothermal switch specifications

- Tripping specifications: C curve.
- Rated current: 10 A.
- Number of poles: 1P+N.
- Breaking capacity: 6 kA.
- Rated AC voltage: 230 V.
- Type of assembly: DIN rail.

Environmental sensors

SUNGUARD SENSOR BOX

SUPVI 016 A

Specifications

- Power supply: 24 VDC.
- Absorption: 150 mA.
- Serial port: RS485.
- Communication protocol: ModBUS.
- Enclosure: polycarbonate with IP68 cable glands (required for connection to environmental sensors).
- Degree of protection: IP65.
- Degree of protection of the sensors: IP65.
- Dimensions (L x D x H): 220 x 140 x 140 mm.
- Connectable sensors:
  - sunlight sensor,
  - module temperature sensor,
  - ambient temperature sensor,
  - wind gauge.
- Inputs:
  - mV input (range 0-10) for radiation sensor,
  - 2-wire or 3-wire PT1 and PT2 inputs for module temperature sensor and ambient temperature sensor,
  - wind gauge input.

Operation

- The Sensor Box SUNGUARD should be connected to the SunGuard Box with a RS485 connection. 24 VDC power supply required (power supply not included).
- Connection to the sunlight sensor and a temperature sensor (module or ambient), allows calculation of the theoretical power of the photovoltaic installation (power of maximum efficiency) and constant and automatic comparison with the power generated by the photovoltaic installation.
- Two or more SUNGUARD SENSOR BOXES can be connected to the same Bus line.

Sunlight sensor

SUPVI 017 A

Specifications

- Range of measurement: 0 to 1,500 W/m².
- Type of sensor: monocrystalline cell (20-24 mm).
- Precision of the sensor: ±5% on a yearly basis.
- Electrical output: 75 mV to 1,000 W/m².
- Sensor: Novaflon laminate and EVA foil.
- Enclosure: Z-profile aluminium corner, sealed connection head.
- Degree of protection: IP65.
- Type of connection: cable 3 m, 2 x 1.0 mm².
- Assembly: 6 mm perforation for screw mounting.
- Dimensions (L x D x H): 55 x 55 x 10 mm.
- Weight: 200 g (cable included).

Operation

- The sunlight sensor, fitted with a monocrystalline cell (13 x 33 mm), measures sun exposure on the basis of the angle and orientation of the photovoltaic modules. It can be used in all weather conditions.
- It should be connected to the Sensor Box SUNGUARD at a maximum distance of 2.5 m.

Module temperature sensor

SUNSY 020 A

Specifications

- Range of measurement: -20 to +150 °C.
- Measuring principle: platinum resistance wire, PT100, 3 wires.
- Precision: Class A.
- Execution: Skin Pad for flat surface measurements.
- Enclosure: aluminium plate, adhesive plate included.
- Degree of protection: IP65.
- Type of connection: cable, 3 m, connection for three conductors.
- Dimensions: 50 x 50 x 1 mm (thickness).

Operation

- The module temperature sensor should be applied on the photovoltaic panel and connected to the SUNGUARD Sensor Box at a maximum distance of 2.5 m.

Ambient temperature sensor

SUPVI 014 A

Specifications

- Range of measurement: -20 to +150 °C.
- Measuring principle: platinum resistance wire.
- Enclosure: Makrolon, Polycarbonate, UV resistance with PG screwing.
- Degree of protection: IP65.
- Type of connection: 2.5m cable, connection for two conductors.
- Dimensions (L x D x H): 52 x 50 x 32 mm.
- Weight 120 g.

Operation

- The ambient temperature sensor should be installed in the shade, in an area protected from water, and connected to the SUNGUARD Sensor Box at a maximum distance of 2.5 m.

Wind gauge

SUPVI 013 A

Specifications

- Power supply voltage: 5 to 24 VDC.
- Maximum current: 15 mA.
- Speed range: 2 to 200 km/h.
- Speed resolution: > 1 km/h.
- Precision: ±2%.
- Repeatability: 0.5%.
- Linearity: ±2%.
- Degree of protection: IP65.
- Operating temperature: -20 °C to +80 °C.
- Dimensions (Ø x h) 123.6 x 138.5 mm.
- Weight: 154 g (wind gauge only), 1.25 kg (wind gauge + 20 m cable).
- Aluminium mounting bracket included.

Operation

- The wind gauge is required in installations based in windy areas in order to monitor rapid reductions in energy production caused by strong gusts of wind.

Router/modem

ROUTER 3G-PRO

SUPVI 0115 A

Specifications

- WAN Wireless:
  - Integrated 3G UMTS module;
  - HSUPA speed (7.2 M Down, 5.76 M Up);
  - supporting EDGE/GPSR Class 12.
- WAN Ethernet:
  - RJ45, 10-100 Mbps, auto MDI/MIDX,
  - Static IP, PPPoE, Client DHCP, PPPTP, L2TP.
- LAN and WiFi:
  - switch, 4 RJ45, 10-100 Mbps, auto MDI/MIDX,
  - WiFi 802.11 b/g/n up to 300 Mbps,
  - WEP, WPA, WPA-PSK, WPA2, WPA2-PSK security,
  - WPS (WiFi Protected Setup),
  - WDS (Wireless Distribution System),
  - WMM (WiFi Multimedia).
- Functionality:
  - always-on, manual 3G WAN connection,
  - remote 3G WAN connection via SMS,
  - DHCP Server, NAT 1toN, Virtual Server, DMZ,
  - SPI Firewall, IP/Service Filter, URL Blocking, MAC control,
  - DoS (Denial of Service) detection and protection,
  - static and dynamic routing, DynDNS,
  - supporting VPN Passthrough for IPSEC, PPTP and L2TP,
  - sending and receiving SMS from WEB interface,
  - local and remote configuration from WEB interface,
  - supporting SNMP, UPnP, Syslog.
- Hardware:
  - removable 3G external antenna (SMA connector),
  - SIM/USIM port,
  - internal WiFi antennas,
  - WPS button,
  - button to return to factory settings,
  - ON-OFF button,
  - external 12 V 1 A power supply.

LCD/LED display

SUN-WM-DY-EXT

SUNSY 021 A

Specifications

- External dimensions (L x D x H): 1,500 x 75 x 700 mm.
- Weight: 15 kg.
- Display structure: aluminium.
- Anti-glare screen.
- For outdoor mounting.
- Pixels: High-brightness LED.
- Character size: 65 x 91 mm, size 13 mm.
- Number of lines: 2.
- Number of characters on display: Total 32.
- Number of characters on first alphanumeric line: 16.
- Number of characters on second alphanumeric line: 16.
- LED writing height: 91 mm.
- Type of display: scrolling pages or characters (512 max).
- Visibility: from 1 to 40 m.
- Number of pixels: 1 344.
- Number of colours: 1 (amber).
- Mounting the display: brackets for wall installation, screws and steel mounting.
- Brightness adjustment: automatic by means of a twilight sensor.
- Power supply voltage: 220 V 50 Hz.
- Communication: via RS485, Modbus/LAN Ethernet connection.

Operation

- SUNGUARD LED DISPLAY is an external monitor that is directly connected to the network through the Ethernet port, allowing operating data of the monitored photovoltaic installation to be viewed in real time. Up to 15 variables can be viewed (e.g. total energy, instantaneous power, number of trees saved, CO_2, equivalent number barrels of oil, etc.)

SUNGUARD INFO 22” display

SUNSY 022 A

Specifications

- Screen dimensions: 22” – 16:9 format.
- Display type: LCD.
- Resolution: 1,920 x 1,080 pixels.
- Brightness: 300 cd/m^2.
- Response time: 5 ms.
- Contrast: 1000:1.
- Horizontal viewing angle: 170°.
- Vertical viewing angle: 160°.
- Interface: DVI, HDMI, USB, VGA.
- Communication data: LAN, WLAN, UMTS, GPRS.
- Datalogger: included (SG-VIDEO-DISPLAY).
- PV installation data display: total energy produced, equivalent number of barrels of oil, number of trees saved, CO_2 emissions avoided, daily energy (digital value and operating graph), activation data, maximum power and total energy produced.
- Other display options: PV installations, customer name, company logo, etc.
- Operation: continuous or option to set up customised operation time.
- Mounting the display: wall installation, mounting bracket included.
- For indoor mounting.
- Colour: black.
- Weight: 4.9 kg.

Operation

- SUNGUARD INFO DISPLAY is an internal monitor that is directly connected to the network through the Ethernet port, allowing the operating data of one or more monitored photovoltaic installations to be viewed in real time.

SUNGUARD INFO 32” DISPLAY

SUNSY 022 A

Specifications

- Screen dimensions: 32” – 16:9 format.
- Display type: LCD.
- Resolution: 1,366 x 768 pixels.
- Brightness: 450 cd/m^2.
- Response time: 5 ms.
- Contrast: 3500:1.
- Viewing angle: 178° max.
- Interface: DVI-D, HDMI, S-Video, VGA.
- Communication data: LAN, WLAN, UMTS, GPRS.
- Datalogger: included (SG-VIDEO-DISPLAY).
- PV installation data display: total energy produced, equivalent number of barrels of oil, number of trees saved, CO2 emissions avoided, daily energy (numerical value and progress graph), activation data, maximum power and total energy produced.
- Other display options: PV installations, customer name, company logo, etc.
- Operation: continuous or option to set up customised operation time.
- Mounting the display: wall installation, mounting bracket included.
- For indoor mounting.
- Colour: black.
- Weight: 11.95 kg.

Operation

- SUNGUARD INFO DISPLAY is an internal monitor that is directly connected to the network through the Ethernet port, allowing the operating data of one or more monitored photovoltaic installations to be viewed in real time.

SUNGUARD CONTROL 42” DISPLAY

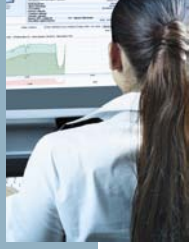
SUNSY 022 A

Specifications

- Screen dimensions: 42” – 16:9 format.
- Display type: LCD.
- Resolution: 1,366 x 768 pixels.
- Brightness: 500 cd/m^2.
- Response time: 5 ms.
- Contrast: 3500:1.
- Viewing angle: 178° max.
- Interface: DVI-D, HDMI, S-Video, VGA.
- Communication data: LAN, WLAN, UMTS, GPRS.
- Datalogger: included (SG-VIDEO-CONTROL).
- Use: through a Web Browser.
- PV installation data display: installation name, location, kWp, instantaneous power, performance ratio, instantaneous radiation, operating inverters/installed inverters, active strings/installed strings, date and time of last update.
- Other display options: Independent management of the installation on-line registration.
- Operation: continuous or option to set up customised operation time.
- Mounting the display: wall installation, mounting bracket included.
- For indoor mounting.
- Colour: black.
- Weight: 11.95 kg.

Operation

- SUNGUARD INFO DISPLAY is an internal monitor that is directly connected to the network through the Ethernet port, allowing operating data of up to 24 monitored photovoltaic installations to be viewed in real time.



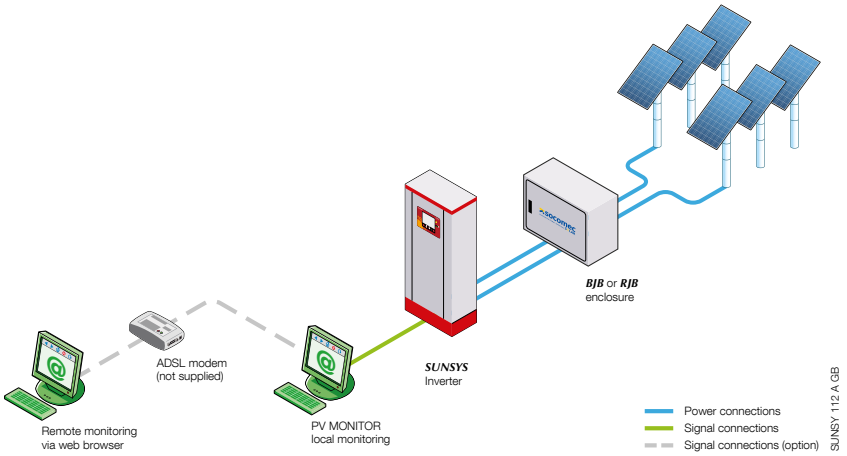
PV Monitor

Monitoring

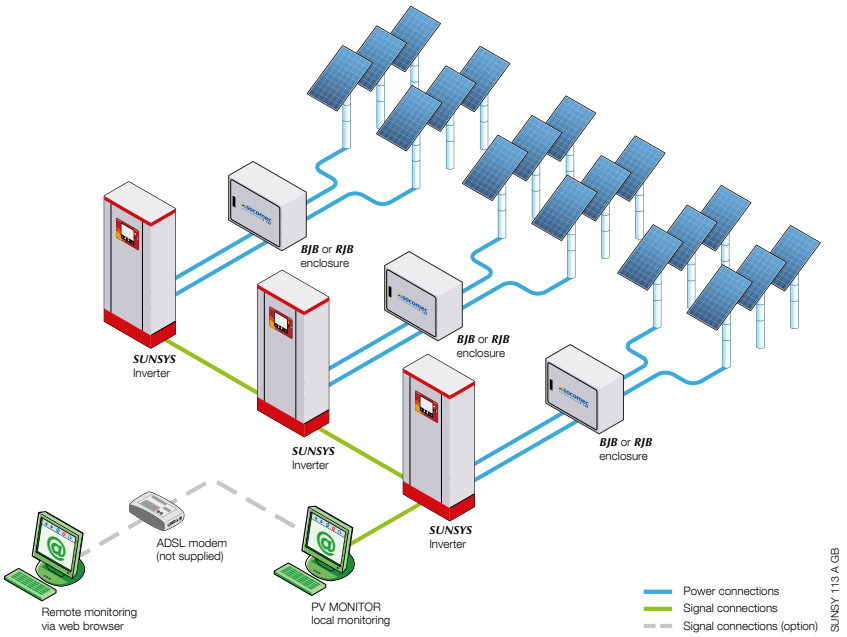
Benefits of PV MONITOR

- Monitoring with a PC via point-to-point communication of SUNSYS H50, SUNSYS B12, SUNSYS B15, SUNSYS B20E and SUNSYS B30 inverters.
- Centralized supervision of a single inverter or up to 31 inverters linked to each other.
- Simplicity of information and use.
- Monitoring of the following parameters:
  - instantaneous power produced by the inverters,
  - power produced in the current day,
  - total energy produced by the plant,
  - event log,
  - data log and graphs,
  - alarms and alerts,
  - status ,
  - measurements.
- Notifications via e-mail, network broadcasting and SMS.

PV MONITOR for local monitoring of one inverter



PV MONITOR for local monitoring of many inverters



socomec
Innovative Power Solutions

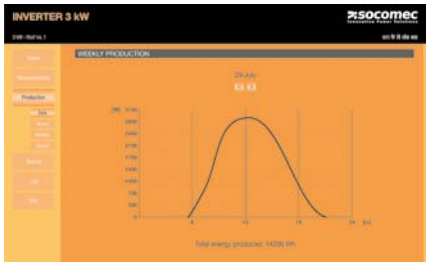
‘WiFi ad Hoc’ protocol

Monitoring

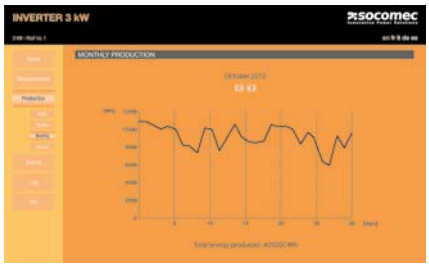
‘WiFi ad Hoc’ protocol for local monitoring

- Wireless communication interface with integrated web server to be installed in the inverter for local monitoring of the photovoltaic paramenters via PC, smartphone or tablet.
- Specifically designed for SUNSYS H30i, SUNSYS H30 and SUNSYS H30+30i inverters.
- Monitoring of the following parameters:
  - instantaneous power produced by the inverters,
  - power produced in the current day,
  - total energy produced by the plant,
  - level of sunlight,
  - inverter internal temperature,
  - event log,
  - data log and graphs,
  - alarms and alerts,
  - status,
  - measurements.
- ‘WiFi ad Hoc’ complies with standard IEEE 802.11 g/n.

SUNSY 114 A

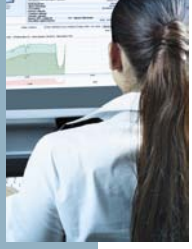


SUNSY 115 A



SUNSY 116 A

SUNSY 117 A GB



DIRIS

monitoring of energy efficiency

GAMME 337 A

The solution for

- Reduction of operating costs
- Reduction of production loss
- Optimization of maintenance costs
- Improvement of installation efficiency

Multi-function measuring units

In addition to providing energy production data, a complete supervision system is fundamental to ensure a data log of events and to guarantee the installation's overall operating efficiency.

Depending on the size of the installation, the DIRIS system allows:

- measuring of the energy consumed per building or manufacturing line, with the aim of distributing and optimising energy costs,
- measurement of all the electrical or analogue parameters (e.g. temperature) to verify the correct operation of the installation,
- supervision of the electricity networks through alarms management, continuous monitoring of the distribution parameters and remote control of the electrical equipment,
- analysis of the power supply quality through a detailed breakdown of the harmonics and identification of voltage dips, interruptions, overvoltage and overcurrent of the electricity network,
- communication of all available information via the ETHERNET network (Modbus TCP, Jbus/Modbus RTU over TCP) or RS485 (Jbus/Modbus, Profibus DP).

Selection guide

	DIRIS A10	DIRIS A17	DIRIS A20	DIRIS A40/A41	DIRIS A60	DIRIS A80
REQUIREMENTS						
Check that the slots are of the correct size and are operating correctly	•	•	•	•	•	•
Check energy distribution	•	•	•	•	•	•
Check and ensure the distribution of energy is correct	-	•	-	•	•	•
Check and control any disturbance	-	-	-	•	•	•
Detect and store any hazardous events for the installations	-	-	-	-	•	•
Monitor the differential currents and earth fault currents depending on the load	-	-	-	-	-	•
Dimensions	4 modules	72x72 built-in	96 x 96 built-in	96 x 96 built-in	96 x 96 built-in	96 x 96 built-in

Functions

	DIRIS A10	DIRIS A17	DIRIS A20	DIRIS A40/A41	DIRIS A60	DIRIS A80
MEASUREMENTS						
Currents, Voltages, Frequency, Active, reactive and apparent power, Power factors	•	•	•	•	•	•
Power forecasting	-	-	-	•	•	•
Voltage/current imbalance; Tangent φ	-	-	-	-	•	•
Temperature	•	-	-	1 to 4 option	1 to 4 option	
Currents, voltages and average frequency	-	-	-	•	•	•
Average power	-	•	-	•	•	•
$I_{\Delta N}$ and I_{PE} currents	-	-	-	-	-	•
SOLUTIONS FOR ENERGY MANAGEMENT						
Energy meters (cl. 0.5S IEC 62053-22; cl. 2 IEC 62053-23)	•	-	•	•	•	•
Energy meters (cl. 1 IEC 62053-21 ; cl.2 IEC 62053-23)	-	•	-	-	-	-
Impulse meters	1*	1*	-	2 to 6 option	2 to 6 option	-
Load curve	-	-	-	•	•	•
QUALITY ANALYSIS AND EVENT DETECTION						
THD 3U, 3V, 3 I/In	Up to level 51	Up to level 31**	Up to level 51	Up to level 63	Up to level 63	Up to level 63
Individual harmonic components up to level 63	-	-	-	•	•	•
Overvoltage, voltage dips, interruptions	-	-	-	-	•	•
Storing of the RMS 1/2 period curve	-	-	-	-	•	•
Alarm output	1*	1*	1* optional	2 to 6 option	2 to 6 option	1 to 2 option
HISTORY LOG OF MEASUREMENTS AND EVENTS						
Load curve	-	-	-	Optional	•	•
Events/Alarm	-	-	-	-/•	•/•	•/•
Average maximum power	kW	•	kW	•	•	•
Average maximum current	•	•	•	•	•	•

** 1 configurable. ** Depending on the reference.*

Standard functions

DIRIS A10

- Multi-function measurement and metering.
- THD of voltages and currents up to level 51.
- Programmable hour counter.
- Alarm management.
- RS485 Jbus/Modbus communication.
- Double tariff function.
- 4 DIN modules.
- Conforms to UL 61010-1.

DIRIS A17

- Multi-function measurement and metering.
- THD of voltages and currents up to level 31 (depending on the reference).
- Alarm management.
- RS485 Jbus/Modbus communication.
- 72 x 72 mm casing.

DIRIS A20

- Multi-function measurement and metering.
- THD of voltages and currents up to level 51.
- Programmable hour counter.
- Alarm management.
- RS485 Jbus/Modbus communication.
- Additional module options.
- 96 x 96 mm casing.
- Conforms to UL 61010-1.

DIRIS A40/A41

- Multi-function measurement and advanced metering.
- Individual harmonics up to level 63.
- RS485 communication (Jbus/Modbus and Profibus-DP) and Ethernet (Modbus TCP and Jbus/Modbus over TCP).
- Additional module options.
- Alert management.
- Indication of power forecasting.
- 96 x 96 mm casing.
- Conforms to UL 61010-1.

DIRIS A60

- Same functions as DIRIS A40.
- Average power load curves (P, Q, S).
- Detection of overvoltage, voltage dips and interruptions.
- Overcurrent detection.
- History of RMS 1/2 period curves associated with events.
- Tangent φ.
- Voltage and current imbalance.

DIRIS A80

- Same functions as DIRIS A60.
- Permanent monitoring of differential currents and earth leakage.
- Dynamic alarm threshold as a function of the load.

structure amorphous
ocrystalline modules

	Tandem structure amorphous and microcrystalline
	128
	9
ATA	
l (mm)	1400 x 1000 x 46
HARACTERISTICS	
uc (V)	59,8
c (A)	3,45
tge Vpm (V)	45,4
ent Ipm (A)	2,82
FFICIENTS	
	-0,3
	0,07
	-0,24
ures	
	5°
	14°
l	29.18 - Nr. 228 modules installed
	319,2

High efficiency monocrystalline modules

Model	High efficiency monocrystalline
GENERAL	
Nominal output (Wp)	210
Module efficiency (%)	16,9
MECHANICAL DATA	
Dimensions (L x H x W) (mm)	1559 x 798 x 46
ELECTRICAL CHARACTERISTICS	
Open circuit voltage Voc (V)	47,7
Short circuit current Isc (A)	5,75
Maximum power volatge Vpm (V)	40
Maximum power current Ipm (A)	5,25
THERMAL COEFFICIENTS	
α Pm (%/°C)	-0,287
α Isc (%/°C)	0,061
α Voc (%/°C)	-0,38
Socomec plant features	
Azimuth	5°
Tilt	14°
Nominal Power (kWp)	36,96 - Nr. 176 modules installed
Surface (m²)	219,2

socomec
Innovative Power Solutions

socomec
Innovative Power Solutions

NON APRIRE

SUNSYS
Solar Inverter

Service, Training and Technology

Customer service

Training

CIM

Commissioning Inspection and Maintenance

The solution for

> High power photovoltaic installations

Every photovoltaic installation is a long-term investment. If maximum overall efficiency is the main objective, then quality of service is equally important.

The expertise of one design, manufacturing and maintenance supplier

- SOCOMEC develops products and services designed to ensure maximum power production from your photovoltaic system.
- Our team understands your requirements, and will provide expertise on electronic components, operating logic and industrial IT.

Specialists at your service

- The CIM (Commissioning Inspection and Maintenance) service has an international strategic presence with over 370 SOCOMEC specialists, engineers and maintenance technicians.

They are available for:

- preventative maintenance,
- corrective maintenance,
- 24h call-out service,
- consultancy, design and implementation of installation changes and updates.

Best guaranteed service

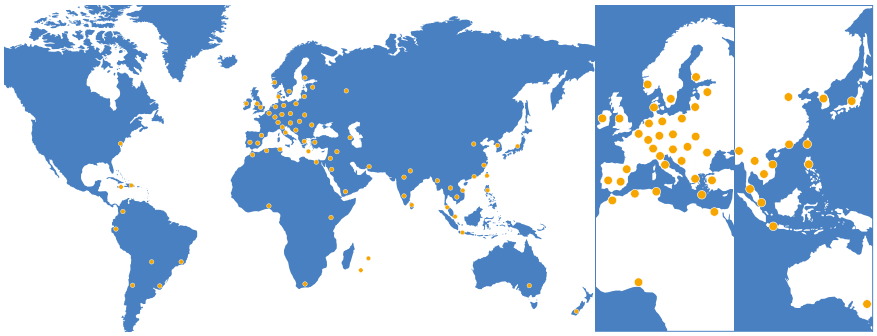
Our expertise is constantly at your disposal to maintain the high performance of your PV facility and as well its continuous production of energy. All of your equipment is monitored round-the-clock by the support service's IT system for complete peace of mind.

Availability of parts

The range of genuine spare parts and components we stock ensure faulty equipment can quickly be restored to operation, while maintaining its original performance and reliability.

Proximity

Our European and worldwide presence ensures that you will always have specialists close to your site, for a fast and efficient response.



CARTE 021 A

Guaranteed response time

With its proximity, specialist personnel and stock of spare parts, our support service enables us to contractually guarantee response times, in addition to 24-hour availability depending on you operating constraints.

Respect for the environment

As manufacturers we are committed to protecting the environment and we actively participate in the development of relevant legislation and regulations.

This ensures we will always comply with legislation on components usage and waste disposal procedures.

APPLI 571 A

Maintenance contracts[1]

Preventative maintenance

As with all equipment, even devices that produce photovoltaic energy need regular maintenance to function as efficiently as possible.

Preventative maintenance allows you to avoid costly malfunctions and extend your facility's service life. This in turn impacts favourably on the MTBF (mean time between failures) of your installation.

Regular inspections

Depending on the type of contract regular inspections will be made in order to:

- check mechanical components,
- check electrical components,
- remove dust,
- update software,
- verify the electronics,
- check ambient conditions.

A report will be provided after each inspection.

Corrective maintenance

As an installation ages it is more likely to malfunction and require specialist repairs.

Your maintenance contract allows you to benefit from:

- fast, priority repairs,
- a choice of response lead times depending on your operational needs: 3 days or next working day[3],
- assistance 24 hours a day, 365 days a year (depending on contract),
- guaranteed response time.

A PMV (Preventative Maintenance Visit) report will be provided after each repair.

Support on request

We provide various services over and above contractual benefits to meet your developing needs throughout the life-cycle of your installations:

- replacement of consumable parts (fans, capacitors),
- moving your equipment,
- implementing ready-to-run installations,
- expert advice and recommendations for your high-quality installation,
- measurements and tests with or without charging bench,
- thermographic inspection,
- additional training sessions for installation operators.

Managing your operating costs

Our different contract packages enable you to pick and choose services to suit your needs (parts, labour, response times, etc.), giving you total control of your operating costs with no nasty surprises on your invoice.

Call centre

The CIM call centre gives priority access to customers with a maintenance contract.

It provides technical support to protect equipment for photovoltaic systems.

A specialist team of electricians, electrical engineers and IT engineers is on hand to respond to all your operational queries.

Adapted solutions

We tailor our services to your operating constraints. This means that for each of your contracts we provide adapted solutions to match your expectations.

Our Gold and Platinum solutions meet your needs while protecting the equipment and ensuring the maximum efficiency of your PV system.

CONTRACTS	GOLD	PLATINUM
MPS – preventive maintenance inspection for 5 years (standard[2])	included	included
Hardware & Software updates	included	included
Labour and travel costs (corrective maintenance)	included	included
Spare parts (excluding consumable parts)	–	included
Call centre availability	working hours	working hours
RTS - Response time to site[3]	within 3 days	within 3 days
Remote monitoring	optional	optional

(1) Please check the availability for your area.
(2) During normal working hours.
(3) Please check the service coverage for your area.

Remote monitoring system[1]

Remote monitoring[1] is a long distance monitoring service using the Sunguard system, which guarantees real time diagnosis 24 hours a day, 7 days a week, 365 days a year. The Sunguard system sends monitoring centre staus reports (regularly or for failure notification) to customers via e-mail, guaranteeing a 24/7/365 service.

Depending on the parameters monitored, notification may be activated due to:

- incorrect usage – the customer is contacted by a skilled technician and requested to carry out simple actions to prevent any further issues arising;
- existing fault – the customer is informed of the device status and technicians are promptly sent to visit the site.

The advantages of remote monitoring

- 24/7/365 monitoring. At night or weekends, the service is ensured by automatic SMS notification from the service centre to on-duty qualified technicians.
- Prevention and early fault detection.
- Less human intervention with a resulting reduction in costs and risks.
- Regular status reports.
- Automatic repair service activation.
- Remote support from qualified technicians.
- Detailed knowledge of the system.

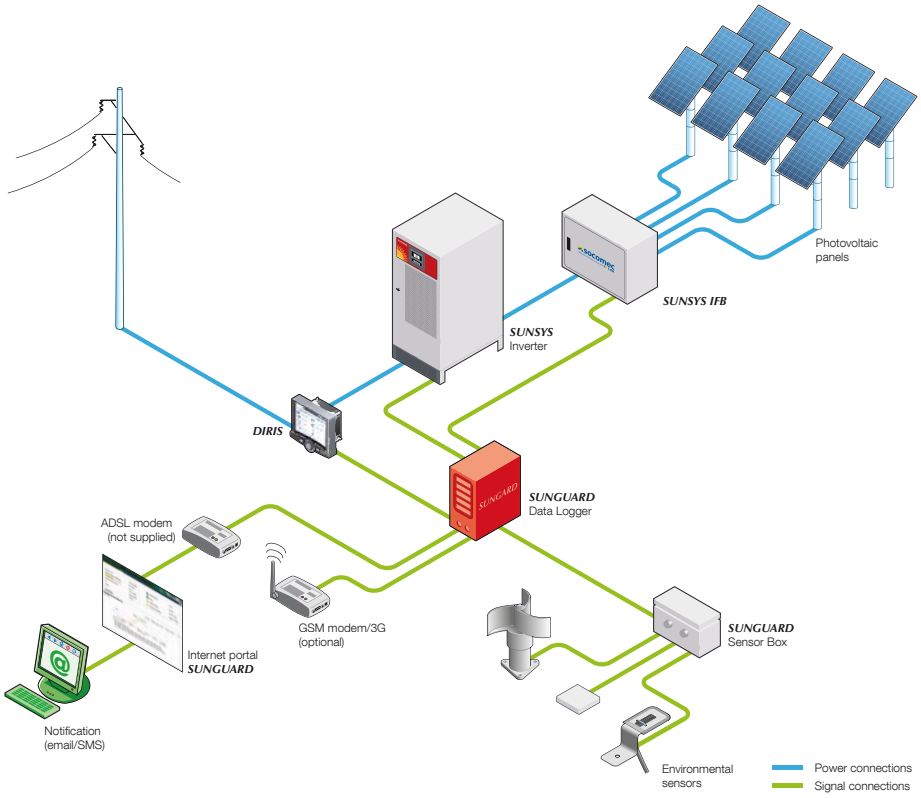
Who needs a remote monitoring system?

Good design and high quality products are not enough in themselves to avoid all possible production losses in your plant. A fast and reliable maintenance service is the best solution for maintaining high system availability for the entire life cycle. Surveillance automation ensures ongoing 24/7/365 monitoring, preventing human error and faults at the first warning signs.

Remote control is also useful for customers whose applications require lower availability levels as customer personnel are not always on hand to manage issues.

Remote monitoring can also cover the energy supply to critical electrical installations and provide regular reports useful for updating the installation event history for more detailed expert analysis at a later date. Such reports help build a more informed picture of energy usage which can be used for future updates/designs or for power quality enhancement consultations.

Remote monitoring provides effective protection for your plant and ensures continuous high-level photovoltaic inverter availability, with dramatically reduced technical intervention times.



SUPV1006AGB

(1) Please check the availability for your area.

CIM Thermo(1)

Thermal technology for precision monitoring of your electrical installation

The CIM Thermo service performs a preventative diagnosis of the risk of components failing in your electrical system through thermographic inspection.
In particular, monitoring covers the following:

- transformers,
- electrical switchboards,
- power factor correction systems,
- distribution cables,
- joints,
- connections,
- terminals,
- clamps,
- protection devices, isolators, fuses, circuit breakers,
- photovoltaic inverters,
- batteries,
- loads (motors and actuators, lighting).


APPLI 195 A

Key benefits that make the difference

- Prevention
  - Photovoltaic inverter fault prevention.
  - Highly effective diagnostics due to the monitoring of cable connections and clamps ; an operation which is impossible using conventional visual inspections.
  - Total control of the system, from the distribution panel to the smallest functional details.
  - Improved safety of personnel, users and customers.
- Cost reduction
  - Reduction in costs due to faults and loss of power.
  - Reduction in costs due to installation downtime.
- Continuous power supply
  - Conveniently scheduled stoppage times and targeted maintenance operations.
  - Diagnostics performed with the system in operation, without power interruption.

SOCOMEC provides a comprehensive, end-to-end diagnostic service:

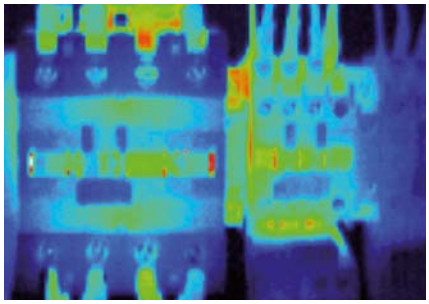
- Analysis: visual inspection of the room, installation and equipment.
- Fault detection: via infrared thermal-camera to detect and quantify faults.
- Solutions: identification of defective components and improvement solutions.
- Repairs: implementation of proposed solutions.
- Measurement of results: effectiveness of applied solutions checked by comparing them with measurements taken before maintenance using a dedicated software application.
- Report: definitive technical record displaying a list of identified critical points, installation status, and recommended monitoring frequency.

Infrared thermography

Thermography, also known as thermal imaging, is the detection of infrared radiation produced by warm objects.

Infrared cameras can detect and photograph this radiation, enabling an object's temperature to be analysed in a non-invasive way and with a high level of precision (to 1/10th of a degree).


CIM 008 A


CIM 009 A

Contract options

SOCOMEC provides a variety of contract plans to:

- detect faults and critical points,
- check the effectiveness of maintenance operations,
- monitor critical areas.


COLN 142 A

(1) Please check the availability for your area.

Replacement of consumable parts

The inverters for SOCOMEC photovoltaic applications have been designed to operate reliably during the normal life cycle of the product in the electrical environments and environmental conditions outlined in the Installation and User's Manual. To maintain the highest efficiency level of the photovoltaic inverter and avoid system downtime and the loss of electricity production, it is very important to carry out preventive maintenance at least once a year. Maintenance involves thorough operational checks of the various electronic and mechanical parts and, when necessary, the routine replacement of parts subject to wear and tear, such as fans and capacitors.

Capacitors

Inside the equipment there are **DC electrolytic capacitors** and **AC filter capacitors.**

Risks due to the deterioration of **AC Capacitors:**

- inverter distortion increase,
- instability of the whole system in the case of parallel configurations,
- overheating of the capacitors which, if prolonged, may cause a sudden failure and cause leakage of fumes, noise pollution and damage to other parts of the inverter,
- increase in total expenditure for system restoration (capacitor replacement costs + repair costs for other damaged parts), compared with normal preventive replacement,
- financial loss resulting from the failure to produce energy from renewable sources.

Risks due to deterioration of **DC Capacitors:**

- fault in the inverter section,
- propagation of the fault in the inverter resulting in damage to other components,
- increase in total expenditure for system restoration (capacitor replacement costs + repair costs for other damaged parts), compared with normal preventive replacement,
- financial loss resulting from the failure to produce energy from renewable sources.

When is it advisable to make a replacement?

Preventative replacement is recommended within one year of operation* shown in the table:

CONSUMABLES	YEAR
Fans	4
DC Capacitors	5
AC Capacitors	7

Fan and capacitor replacement must only be carried out by qualified personnel. Only authorised SOCOMEC personnel are allowed to provide guidance on replacing spare parts.

** With normal use of the photovoltaic inverter in accordance with the instructions given in the Installation and User's Manual. The average service life of capacitors and fans can be affected if the environmental conditions (use of the equipment, work environment and type of load) are abnormal or very severe.*

Fans

The service life of **fans** used for cooling power parts depends on conditions of use and environmental conditions (temperature, dust).

Risks due to failure of the cooling fan:

- most of the photovoltaic inverters have backup for cooling fans. If one or more of them fails, eliminating backup, the inverter may gradually overheat. If all the fans fail the inverter will shut down and energy produced from renewable sources will cease.

The refresher course programme

SYDIV 032 A

The refresher course programme is aimed at SOCOMEC personnel and commercial partners.

SOCOMEC designers, contractors, surveyors, architects, energy managers, retailers, wholesalers and commercial partners		Designers, contractors, maintenance staff, project leaders and managers		Area managers, sales reps, agents, pre-sales technical staff and sales force
BASIC	ADVANCED	SERVICE	ADVANCED	SALES
BASIC Scheduled	**ADVANCED** Scheduled or on request	**SERVICE** On request	**ADVANCED** Scheduled or on request	**SALES** Scheduled

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A complete training programme

Training in 3 phases

The technical course is divided into three phases providing you with:
- complete knowledge of SOCOMEC's sales products and equipment,
- the ability to understand customer needs and to suggest the best solution,
- knowledge of competitor products,
- the ability to compare the SOCOMEC offer with that of the competition.

BASIC

BASIC course
Basic notions of photovoltaic technology and an overview of its main components (PV modules, field boxes and inverters).

SERVICE

SERVICE course
Operations necessary for the commissioning of inverters and related accessories.

ADVANCED

ADVANCED course
Technical-commercial update on the Sunsys inverter range.
Suitable for those who have completed the Service course.

Training specifically for sales reps

SALES

SALES course
Advantages and special features of the SOCOMEC offer, decision criteria and comparison of the different architectures, benefits for contractors.
Specifically for those who have completed the Basic course.

The learning process

- Courses organised according to level of knowledge
- Market oriented
- Quick guide for those taking part for the first time (sales reps and distributors)
- Monitoring of level of knowledge

BASIC course


SYDIV 037 A

Basic notions of photovoltaic technology and an overview of its main components (PV modules, field boxes and inverters).

Content

- Solar radiation, characteristics and photovoltaic module technology.
- Inverter architecture and technology.
- Architectures: string, centralized and modular.
- Presentation of the SUNSYS H, SUNSYS B and SUNSYS P ranges, SUNSYS PCS² and SUNSYS HPS solutions.
- Presentation of the SUNSYS IFB field boxes.
- Sizing (e.g. for residential and industrial installations).
- PV CAD.
- Local and remote monitoring: specifications and choice of components.
- Communication: SUNSYS H and SUNSYS P supervision.
- SOCOMEC references.

Aimed at

- Designers and contractors.
- Architects, surveyors and energy managers.
- Retailers/Wholesalers interested in photovoltaics.
- SOCOMEC's commercial partners.

Level required

- Basics of electronics and electrical systems.

Note

- Maximum number of participants: 15 people.
- Includes end-of-course test and certificate of attendance.
- Participants are asked to fill out a satisfaction questionnaire.
- The course includes a visit to the SOCOMEC company site and photovoltaic installation.

SERVICE course

Operations necessary for the commissioning of inverters and related accessories.

Content

- Correct installation of the inverters and interconnection to the PV field and AC enclosure, auxiliary service power supply.
- Installation, positioning of the technical compartment and inverter area.
- AC system component choice.
- Communication with the inverters: PV monitoring software.
- SUNGUARD supervision system (specifications, performance, options and modes of use).

Section A: SUNSYS H and SUNSYS B range

- Start-up of a demo inverter.
- Inverter maintenance.
- Troubleshooting (Level 1).

Section B: SUNSYS P range

- Start-up of a demo inverter.
- Assembly accessories.
- Sunsys IFB field boxes: specifications and string monitoring of the photovoltaic installation.
- Inverter maintenance.
- Troubleshooting (Level 1).

Aimed at

- Designers, contractors and maintenance staff.
- Project leaders and managers.

Level required

- Basics of electronics and electrical systems.
- Participation in the Basic course.

Note

- Maximum number of participants: 6 people.
- Includes end-of-course test and certificate of attendance.
- Participants are asked to fill out a satisfaction questionnaire.

ADVANCED course

Technical-commercial update on the Sunsys inverter range.

Suitable for those who have completed the Service course.

Content

- Presentation of latest updates of the SUNSYS H, SUNSYS B and SUNSYS P ranges, SUNSYS PCS² and SUNSYS HPS solutions.
- Sizing (e.g. related to product updates).
- Local and remote monitoring: specifications and choice of components.
- Product supervision.
- Correct installation of the inverters and interconnection to the PV field and AC enclosure, auxiliary service power supply.
- Installation, positioning of the technical compartment and inverter area.
- Start-up of a demo inverter.
- Inverter maintenance.

Aimed at

- Designers, contractors and maintenance staff.
- Project leaders and managers.

Level required

- Basics of electronics and electrical systems.
- Participation in the Basic and Service course.

Note

- Maximum number of participants: 6 people.
- Includes end-of-course test and certificate of attendance.
- Participants are asked to fill out a satisfaction questionnaire.

SALES course


SYDIV 014 A

Advantages and special features of the SOCOMEC offer, decision criteria and comparison of the different architectures, benefits for contractors.
Specifically for those who have completed the Basic course.

Content

- Presentation of the SOCOMEC group.
- Presentation of the SUNSYS H, SUNSYS B and SUNSYS P ranges, SUNSYS PCS² and SUNSYS HPS solutions.
- Advantages of the SOCOMEC products and services offering.
- Product offers: ease of installation and flexible sizing.
- Competitive advantages: company structure, network proximity of customer service network.
- Reasons for choosing SOCOMEC:
  - technical reasons,
  - commercial reasons.
- SOCOMEC references.

Level required

- Basics of electronics and electrical systems.
- Participation in the Basic course.

Aimed at

- Area managers, sales reps, agents, pre-sales technical staff and general sales force.

Note

- Maximum number of participants: 15 people.
- Includes end-of-course test and certificate of attendance.
- Participants are asked to fill out a satisfaction questionnaire.
- The course includes a visit to the SOCOMEC company site and photovoltaic installation.


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References

Regardless of the architecture of the photovoltaic installation, the type of modules used or the amount of energy produced, SOCOMEC's innovative solutions are synonymous with high levels of efficiency and reliability.

Our experience in designing reliable solutions that are suitable for the harshest environmental conditions, our long-standing reputation for high-quality service provision and respect for customer deadlines make us stand out from our main competitors.

SOCOMEC photovoltaic installation

Every company's environmental policy has an impact on the area in which it is located. Every production process has an effect on people, not only employees, but also those who live in the surrounding area.

Having a "Green Attitude" means respecting our environment, protecting what is most precious: air, water, natural resources and biodiversity, but also our human environment, and the health and safety of people.

SOCOMEC supports the ethos of eco-sustainability.

From the outset, the company has been involved in research into solutions which minimize the impact of its own activities on the environment, especially in the reduction of CO_2 emissions and the optimization of energy consumption, having installed three different photovoltaic systems for the production of most of the energy used in its factories.

Benfeld (France)

Roof installation

- Power: 100 kWp.
- Inverters: 1x SUNSYS B20, 5x SUNSYS H30id, 1x SUNSYS P66TR, 1x common DC bar kit, 1x DC surge protection kit, 1x insulation monitoring device kit.
- Field boxes: 4x SUNSYS IFB-8R, 4x SUNSYS under voltage tripping coil, 7x fuse protection kits, 1x field box with 1 string with under voltage coil.
- Remote monitoring system: SUNSYS SUNGUARD.
- Panel technology: monocrystalline
- Production: 100000 kWh/year.
- CO_2 emissions avoided: 56500 kg/year.

CORPO 396 A

CORPO 401 A

Huttenheim (France)

Roof installation

- Power: 100 kWp.
- Inverters: 1x SUNSYS P100TR, 1x common DC bar kit, 1x DC surge protection kit, 1x insulation monitoring device kit.
- Field boxes: 3x SUNSYS IFB-8R, 3x SUNSYS under voltage tripping coil, 5x fuse protection kits.
- Remote monitoring system: SUNSYS SUNGUARD.
- Panel technology: monocrystalline.
- Production: 99100 kWh/year.
- CO_2 emissions avoided: 55900 kg/year.

CORPO 410 A

CORPO 411 A

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Isola Vicentina (Italy)

Roof installation

- Power: 175 kWp.
- Inverters: 3x SUNSYS P33TR, 1x SUNSYS P66TR.
- Field boxes: 4x SUNSYS IFB.
- Remote monitoring system: SUNSYS SUNGUARD.
- Panel technology:
  - microamorphous,
  - high-efficiency monocrystalline back-contact,
  - HIT monocrystalline,
  - polycrystalline.
- Production: 195500 kWh/year.
- CO_2 emissions avoided: 110000 kg/year.

CORPO 283 B

Roof installation

- Power: 30 kWp.
- Inverter with field box: 10x SUNSYS H30i.
- Remote monitoring system: SUNSYS H30i wireless communication.
- Panel technology: polycrystalline.
- Production: 31000 kWh/year.
- CO_2 emissions avoided: 17500 kg/year.


CORPO 382 A

Installation on two-axle trackers with two-axle astronomical control

- Power: 14.5 kWp.
- Inverters: 1x SUNSYS B15.
- Field boxes: 1x SUNSYS IFB.
- Remote monitoring system: SUNSYS SUNGUARD.
- Panel technology: HIT monocrystalline.
- Production: 17000 kWh/year.
- CO_2 emissions avoided: 9500 kg/year.


CORPO 336 A

References

Regardless of the application, the architecture of the photovoltaic installation, the type of modules used or the amount of energy produced, SOCOMEC's innovative solutions are synonymous of high efficiency and reliability.

Thanks to SOCOMEC solutions, several MWp of power has been installed in the world helping to preserve natural resources and resulting in a drastic reduction of CO_2 emissions.

SUNSYS B special solution

- For outdoor installation
- Fully assembled including inverter and string box
- Ready to be installed

A selection of our solutions

On-grid solutions

- 80 MWp solar park in Italy, the biggest PV plant in Europe.
- 15 MWp solar parks in Romania.
- More than 30 Sunsys Shelters installed in Europe.

Energy Storage solutions

- Nice Grid partnership in France.
- Pilot projects in Italy.

Off-grid solutions

- More than 500 MWh/year produced with Sunsys HPS in the Democratic Republic of the Congo, Benin, Malawi and Tanzania.

NICE GRID: tomorrow's smart electrical grids

Socomec is part of a consortium tasked with developing the extensive production of photovoltaic (PV) electricity on the ERDF network in various districts of the town of Carros, near Nice (south coast of France). This innovative project - called the "NICE GRID" - is at the heart of the European energy transition project that aims by the year 2020 to be producing more than 20 % of electrical energy via renewable sources. By participating in this key project, as well as other innovative European projects currently being tested, Socomec is clearly justifying its position as a specialist in the availability, control and security of low voltage electrical networks.

The Socomec Group, partner of the

NICE GRID
A SMART SOLAR DISTRICT

● On-grid application ● Off-grid application ● Energy storage application ● Nice Grid partnership

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15, rue de Commerce - L-1351 Luxembourg

Socomec worldwide

IN EUROPE

BELGIUM
Critical Power / Power Control & Safety / Energy Efficiency / Solar Power Power
Tel. +32 2 340 02 30
Fax +32 2 346 28 99
info.be@socomec.com

FRANCE
Critical Power / Power Control & Safety / Energy Efficiency / Solar Power
Tel. +33 1 45 14 63 00
Fax +33 1 48 67 31 12
dcm.ups.fr@socomec.com

GERMANY
Critical Power
Tel. +49 621 71 68 40
Fax +49 621 71 68 444
info.ups.de@socomec.com

Power Control & Safety / Energy Efficiency
Tel. +49 7243 65292 0
Fax +49 7243 65292 13
info.scp.de@socomec.com

ITALY
Critical Power
Tel.+39 02 98 242 942
Fax +39 02 98 240 723
info.ups.it@socomec.com

Power Control & Safety / Energy Efficiency
Tel.+39 02 98 49 821
Fax +39 02 98 24 33 10
info.scp.it@socomec.com

Solar Power
Tel. +39 0444 598611
Fax +39 0444 598627
info.solar.it@socomec.com

NETHERLANDS
Critical Power / Power Control & Safety / Energy Efficiency / Solar Power
Tel. +31 30 760 0900
Fax +31 30 637 2166
info.nl@socomec.com

POLAND
Critical Power
Tel. +48 22 825 73 60
Fax. +48 22 825 73 60
info.ups.pl@socomec.com

Power Control & Safety / Energy Efficiency
Tel. +48 91 442 64 11
Fax +48 91 442 64 19
info.scp.pl@socomec.com

PORTUGAL
Critical Power / Solar Power
Tel.+351 261 812 599
Fax +351 261 812 570
info.ups.pt@socomec.com

ROMANIA
Critical Power / Power Control & Safety / Energy Efficiency / Solar Power
Tel. +40 21 319 36 88
Fax +40 21 319 36 89
info.ro@socomec.com

RUSSIA
Critical Power / Power Control & Safety / Energy Efficiency / Solar Power
Tel. +7 495 775 19 85
Fax +7 495 775 19 85
info.ru@socomec.com

SLOVENIA
Critical Power / Power Control & Safety / Energy Efficiency / Solar Power
Tel. +386 1 5807 860
Fax +386 1 561 11 73
info.si@socomec.com

SPAIN
Critical Power / Power Control & Safety / Energy Efficiency / Solar Power
Tel. +34 93 540 75 75
Fax +34 93 540 75 76
info.es@socomec.com

TURKEY
Critical Power / Power Control & Safety / Energy Efficiency / Solar Power
Tel. +90 216 540 71 20-21-22
Fax +90 216 540 71 27
info.tr@socomec.com

UNITED KINGDOM
Critical Power
Tel.+44 1285 863 300
Fax+44 1285 862 304
info.ups.uk@socomec.com

Power Control & Safety / Energy Efficiency
Tel. +44 1462 440 033
Fax +44 1462 431 143
info.scp.uk@socomec.com

IN ASIA PACIFIC

AUSTRALIA
Critical Power
Tel. +61 2 9325 3900
Fax +61 2 9888 9544
info.ups.au@socomec.com

CHINA
Critical Power / Power Control & Safety / Energy Efficiency
Tel. +86 21 52 98 95 55
Fax +86 21 62 28 34 68
info.cn@socomec.com

INDIA
Critical Power / Solar Power
Tel. +91 44 39215400
Fax +91 44 39215450 & 51
info.ups.in@socomec.com
info.solar.in@socomec.com

Power Control & Safety / Energy Efficiency
Tel. +91 124 4027210
Fax +91 124 4562738
info.scp.in@socomec.com

SINGAPORE
Critical Power / Power Control & Safety / Energy Efficiency
Tel.+65 6506 7600
Fax +65 64 58 7377
info.sg@socomec.com

THAILAND
Critical Power
Tel. +66 2 941 1644 7
Fax +66 2 941 1650
info.ups.th@socomec.com

VIETNAM
Critical Power
Tel. +84 8 3559 1220
Fax +84 8 3559 1221
info.ups.vn@socomec.com

IN MIDDLE EAST

UNITED ARAB EMIRATES
Critical Power / Power Control & Safety / Energy Efficiency / Solar Power
Tel.+971 4 29 98 441
Fax +971 4 29 98 449
info.ae@socomec.com

IN AMERICA

USA, CANADA & MEXICO
Power Control & Safety / Energy Efficiency
Tel. +1 617 245 0447
Fax +1 617 245 0437
info.us@socomec.com

OTHER COUNTRIES

NORTH AFRICA
Algeria / Morocco / Tunisia
info.naf@socomec.com

AFRICA
Other countries
info.africa@socomec.com

SOUTH EUROPE
Cyprus / Greece / Israel / Malta
info.se@socomec.com

SOUTH AMERICA
Tel. +34 93 540 75 75
info.es@socomec.com

MORE DETAILS
www.socomec.com/worldwide

HEAD OFFICE

SOCOMEC GROUP
S.A. SOCOMEC capital 10 816 800€
R.C.S. Strasbourg B 548 500 149
B.P. 60010 - 1, rue de Westhouse
F-67235 Benfeld Cedex - FRANCE
Tel. +33 3 88 57 41 41
Fax +33 3 88 74 08 00
info.scp.isd@socomec.com

YOUR DISTRIBUTOR

www.socomec.com

ENERGY SPECIALIST SINCE 1922

socomec
Innovative Power Solutions

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