HELIOS POWER

riello ups

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RIELLO UPS, A HISTORY OF RESEARCH AND CONTINUITY

RIELLO ELETTRONICA

Riello Elettronica is the mother company of a group of companies operating in two industrial sectors: Energy, and Automation and Security. Established in 1986, it started manufacturing power supplies for information technology applications. In 1987 it embarked on the manufacture of UNINTERRUPTIBLE POWER SUPPLIES (UPS). In 1995 it became a Holding Company and all activities concerned with Uninterruptible Power Supplies were grouped under the new organisation RIELLO UPS. The new structure formed the basis for an important phase of development and acquisition of companies operating in the energy sector and thus becoming an international Group.

RIELLO UPS

Guaranteeing energy is the primary service of RIELLO UPS, a company that identifies Energy as the prime mover of daily life.

Everything moves and depends on Energy, which surrounds and reassures us, maintaining the delicate balance between Man and Nature. Ensuring continuity to this system is RIELLO UPS' daily challenge, continuously making products that can ensure the optimal functionality of every electrical system, with the utmost safety for man and the environment.

RIELLO UPS is a leading player in offering complete solutions in electrical systems. It is this competence that allows the Company to provide all the applications needed by the market today, providing the user with a wide range of secure and technically advanced complete solutions, to meet all requirements, even highly critical ones.

The current range of products comprises over 60 different models with different technologies and including continuous power systems, stabilizers, back-up units for security and emergency applications, and inverters for solar applications.

CONTINUOUS GROWTH: VALUE TO FACTS

The formula RIELLO UPS has used since the beginning of its activity is its involvement in every single link in the production chain, from research and experimentation to design, production, distribution and after sales service.
In today's world this choice involves considerable economic and managerial commitment, but is a necessary to guarantee development planning, together with the continuity and quality criteria imposed by a rapidly evolving market. RIELLO UPS owes much of its international status as a market leader, meeting demand with an extensive range of solutions, to its company policy: a winning vision confirmed by facts.

INNOVATION, THE FIRST OBJECTIVE OF R&D CENTRES

Key practices of Research and Development applied by RIELLO UPS have been to develop a technological culture capable of pursuing strategic company objectives and to progressively increase the areas of development. Technological governance involving the entire Group is set alongside and combined with the effort used to identify new scenarios and redefine others. All the necessary areas of expertise are thoroughly and constantly adapted to meet these needs.
Substantial and constant investments in the research and development of new solutions allow RIELLO UPS to put a range of highly technological products on the market. A few years ago RIELLO UPS set up two specialised Research Centres: one in Legnago for the design of standard UPSs up to 120kVA without transformers, and one in Cormano, for the design of UPSs up to 800kVA with transformers and for products tailor-made to clients' specifications. Inverters for photovoltaic applications are also designed.

The facilities are organised in three different areas, corresponding to the different project phases of development of a new product:

- Project area, where new UPSs are designed;
- Experimental area, comprising laboratories for testing and analysing prototypes;
- Testing area where tests are carried out for the validation of prototypes.

HELIOS POWER INVERTER: THE "BEST ENERGY SAVER" FOR YOUR SYSTEM

The trend towards reducing energy consumption and the widespread culture for a sustainable environment are predominant themes in RIELLO UPS's corporate scenario. Attention to this has resulted in the creation of projects tied to this concept of environment sustainability, and investment in new alternative technologies. This is a social commitment that aims at improving technology for generating clean energy and optimising its performance to safeguard the environment and especially future generations.
RIELLO UPS's major efforts were focused on the main renewable source: solar energy. This energy source can be used directly or, if well converted, transformed into electricity, freeing us permanently from our dependence on oil and from other alternative unsafe and polluting sources. Towards this end, RIELLO UPS undertook to design of an innovative Inverter series for grid-connected photovoltaic plants. This is the Helios Power Inverter with highly reliable, high performance features giving the best performance of its category, and which allows recovery of the initial investment within a specific timeframe.

SAFEGUARDING THE ENVIRONMENT FOR EVERYONE'S PEACE OF MIND

RIELLO UPS has always given attention to the impact of its activities on the environment and so has planned to obtain its ISO 14001 certification by the end of 2008. It has already put into practice all the procedures to reduce pollution and control resources. This entails disposing of waste in accordance with legislation, avoiding material and energy waste, and expecting suppliers to adopt the same procedures. RIELLO UPS also manages and recycles electronic equipment waste according to European Community guidelines (RAEE) and does not use dangerous substances (RoHS) in the products it puts on the market. RIELLO UPS' concern for quality and the environment does not stem from commercial requirements to obtain a trademark or certification but from the conviction that these are values upon which to establish an activity with the future as an objective. A clear example of this philosophy is RIELLO UPS' entry into the photovoltaic market - a quality market of the future, safeguarding the environment.

All RIELLO UPS employees undergo specific training and apply high standards, which often exceed existing regulations. All of this is normal for RIELLO UPS because it looks towards the future and to the world we live in.

INVERTER TECHNOLOGY FOR GRID-CONNECTED PLANTS

A photovoltaic generator produces direct electric current and can therefore only supply loads which work with this form of current, mainly with voltages of 12, 24 and 48V. Usually loads work with alternating current and if the plant is connected to the electricity transmission grid the output current must be of this type; European standards envisage 230V / 50Hz for single-phase and 400V / 50Hz for three-phase networks. Thus the need to transform direct current output from the PV generator to alternating current. This is done by the inverter, which apart from the DC/AC conversion also increases the output voltage up to the electricity network voltage level for inclusion in the network. The current introduced must in fact have a sinusoidal waveform and be synchronized with the network frequency and, in case of power failure, even for short periods, the inverter must be capable of disconnecting immediately. Another fundamental feature for inverters is the optimization of the effective energy production of the plant with respect to the incident solar radiation, by regulating the Maximum Power Point (MPP).
Optimum technical solutions according to local conditions have resulted in the classification of three different types of inverter and configurations:

CENTRALIZED INVERTER

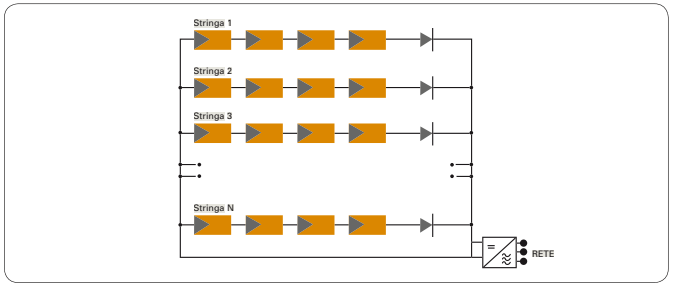
A single inverter handles the whole plant, which can supply power even in the MW range. All the strings, made up of modules connected in series, are joined together in a parallel connection. Advantages of this solution are limited economic investments, plant simplification and reduced maintenance costs. One disadvantage is the sensitivity to partial shading thus limiting the optimum exploitation of every string. It is ideal for solar fields with uniform orientation, inclination and conditions of shade.

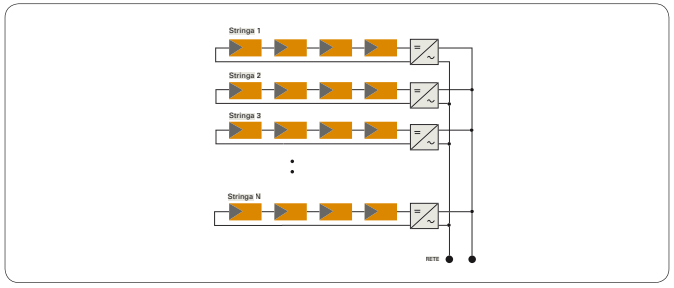
STRING INVERTER

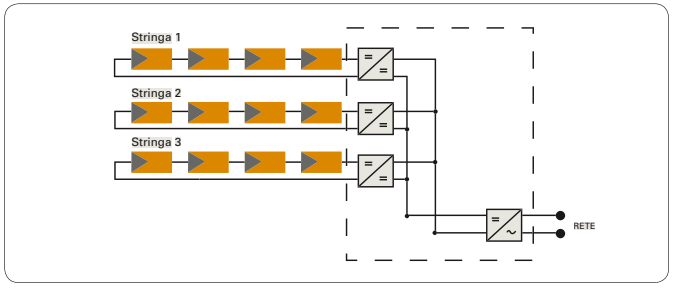
Every string, made up of various modules in series, has its own inverter representing an independent mini-plant. Efficiency is improved with this configuration compared to centralized inverters using single MPPT devices, reducing losses due to shading. It has a higher cost per power batch compared to a plant with a centralized inverter. It is suitable for joined solar fields with various conditions of radiation. It can also be used for plants made up of several geographically distributed solar fields.

MULTI-STRING INVERTER

This topology is a trade-off between centralized inverters and string inverters, allowing the connection of two or three strings for each unit with different orientations, inclinations and power. From the DC generator aspect the strings are connected to dedicated inputs handled by independent MPPTs and from the aspect of inclusion in the network they operate like a centralized inverter optimizing the efficiency. This is the system with the best cost/performance ratio.







RATING

THE INVERTER

During the plant design phase and when selecting the PV system components, the compatibility between the PV generator's electrical characteristics and those of the DC/AC converter i.e. the inverter, must be verified.

The main photovoltaic generator parameters to consider are power, voltage and current generated by the generator itself under the various operation conditions. For the inverter it is necessary to know:

- the MPPT interval, which is the voltage range in which the inverter is capable of tracking the maximum power point;
- the maximum d.c. voltage in open circuit;
- the maximum input current.

THE PHOTOVOLTAIC FIELD

The ideal photovoltaic generator power is generally 10÷25% more than the maximum power supplied by the inverter in order to compensate for the loss of power of the PV modules due to dirt accumulated over time, the operating temperature, cable and inverter losses apart from performance degradation of the PV module due to ageing.

The conditions of installation of the field itself (latitude, orientation, slope, etc.) must also be taken into account.

In particular exceptional conditions when the supplied power in the network is greater than the maximum acceptable for the inverter, the inverter protects itself by lowering said power to the rated value (or the overloading value for a limited period).

Some inverter manufacturers use the power value of the photovoltaic field to identify its model. This value should not to be confused with the real power supplied to the network which can be much less; in fact our Helios Power 2800 is capable of supplying a maximum AC power of 3000W, while some inverters labelled as "3000" have rated AC power values of 2500W. Clearly the two models are not equivalent and the correct choice of product must be carefully considered to guarantee the best performance for your plant. As far as the open circuit maximum voltage of the modules is concerned, it must be remembered that the values supplied by the manufacturers are normally specified at a temperature of 25C. The PV modules supply a voltage to their ends which varies as a function of the operating temperature; more precisely, their voltage increases as the temperature decreases.

All this implies that the verification of the maximum open circuit voltage must be carried out according to the assumed minimum operating temperature and at that temperature the voltage must be less than the maximum applied at the inverter input.

CONNECTING TO THE ELECTRICAL GRID

To obtain the desired power it is possible to connect more inverters in parallel to the grid. When the total power exceeds 6kW the three-phase connection (CEI 11-20; V1) becomes mandatory, obtainable also by connecting several single-phase inverters between a phase and neutral.
If the latter solution is used, the power should be distributed equally on the three phases maintaining the imbalance under 6kW. Utilizing more inverters means placing more MPPTs with the result of being able to run each unit separately, optimizing the configuration and consequently the performance of the entire plant.
Furthermore in the event of inverter malfunction, only the part involved in the malfunction is affected and not the entire production as in the case of the single inverter.
NOTE: It must be remembered that if the total production power exceeds 20kW the galvanic separation between the direct current part and the alternating current part by means of an isolating transformer becomes necessary. It is furthermore mandatory to insert a single interface system surpassing the three units installed in the plant.

Three phase

Single phase

RATING EXAMPLE

To better understand the mechanisms regulating the choice of the PV field, let us imagine, as in the example below, a 3kW plant. The ideal inverter is of course the Helios Power 2800, but it is the following main electrical properties that should be given importance and attention.

Inverter properties: Helios Power

Rated alternating current power: 2800W
Maximum alternating current power: 3000W
Maximum open circuit direct voltage: 500V
Rated direct voltage: 360V
Minimum MPPT voltage: 150V
Maximum input current: 13A

Module FV properties (a 2°C at 1000W/m2)

Peak power: 190W
Voltage at maximum power Vmp: 30,1V
Open circuit voltage Voc: 36,4V
Current at maximum power Imp: 6,32A
Temperature coefficient (1) %/°C: .....-0,46%

Firstly we must calculate the number of modules necessary to obtain the required power, simulating rating with 16 and 18 modules. In the former case we will get a power of 3040W (190Wx16), in the latter 3420W (190Wx18). We will choose the second of the two options which gives the best performance efficiency over time for the reasons already covered.
Now we must verify the feasibility of making a single string made up of 18 modules or the alternative of connecting 2 strings of 9 modules each. In the first case, the total resulting voltage is of 655.2V (18x36.4), which greatly exceeds the inverter's maximum acceptable level of 500V. Selecting 2 strings of 9 modules, we obtain a power value of 327.6V and although with double the current given in the previous example, it is nonetheless compatible: 2 strings x 6.32A = 12.64A < 13A which is the maximum acceptable current of the Helios Power 2800. Finally we need to control the PV generator's maximum no-load voltage at the estimated minimum working temperature, say, equal to -10°C. Since the variable coefficient of the voltage at a given temperature (0.46%/°C) is known, this can now be checked. The increment of the PV generator voltage with decreasing temperature is obtained in this way:
327.6V x 0.46% = 1.507V per °C. This value is then multiplied by 35, the estimated minimum change in operating temperature, compared to a reference of 25°C: 1.507V x 35 = 52.74V.
Adding this increment value to the initial value, 327.6V + 52.74V = 380.34V, gives the voltage the PV field will reach with no load with a radiation of 1000W/m2 at -10°C. Since 380.34V < 500V, compatibility is confirmed.

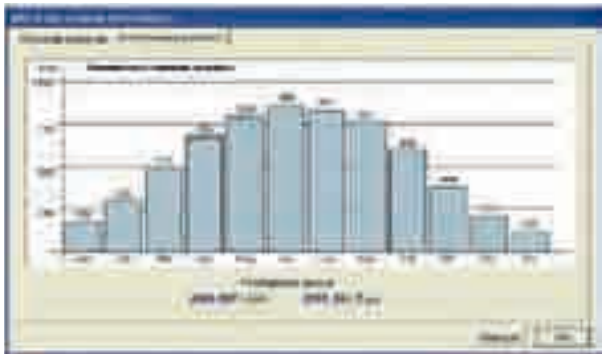
(1) The value in mV/°C can be found in PV module datasheets; in this case, in order to find the increment in photovoltaic field temperature with respect to standard conditions, it is sufficient to multiply this value by the change in temperature and by the number of modules making up the string.

PV CONFIGURATOR

PV Configurator software allows the correct rating of your grid-connected photovoltaic plant in a few simple steps. By inputting data and using the updated modules' archive, the configurator will be able to suggest the best inverter, calculating the annual predicted efficiency and providing an economic assessment based on incentives described on the national rules.
Rating example. To better understand the mechanisms regulating the choice of the PV field, let us imagine, as in the example, a 3kW plant. The ideal inverter is of course the Helios Power 2800, but it is the following main electrical properties that should be given importance and attention.

MAIN PROPERTIES

- updated database of photovoltaic modules
- verification of the plant's electrical values (power, MPP voltage, open circuit voltage, currents, etc.)
- multilingual support



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HELIOS POWER

TABLE FOR CHOOSING

TRANSFORMERLESS SOLAR INVERTERS

Product code	HP 1500	HP2000	HP2800	HP4000	HP4065	HP6065	HP6165	HP10065
INPUT								
Recommended power of the photovoltaic field	1960 W	2600 W	3650 W	5200 W	5200 W	6000 W	7500 W	5500 W each traker (max 13500 W)
Maximum direct voltage in an open circuit	450 Vcc	500 Vcc	500 Vcc	500 Vcc	500 Vcc	750 Vcc	550 Vcc	800 Vcc
Rated direct voltage	360 Vcc	360 Vcc	360 Vcc	360 Vcc	360 Vcc	600 Vcc	360 Vcc	640 Vcc
MPPT Interval	200 ÷ 405 Vcc	250 ÷ 450 Vcc	250 ÷ 450 Vcc	250 ÷ 450 Vcc	250 ÷ 450 Vcc	190 ÷ 700 Vcc	180 ÷ 550 Vcc	300 ÷ 800 Vcc
Number of inputs	1	1	1	1	1	3	1	3
OUTPUT								
Rated power alternating current	1500 W	2000 W	2800 W	4000 W	4000 W	4600 W	6000 W	10000 W
Maximum power alternating current	1650 W	2200 W	3000 W	4400 W	4400 W	5100 W	6000 W	11000W
Operating voltage	230 Vca	230 Vca	230 Vca	230 Vca	230 Vca	230 Vca	230 Vca	400Vca 3F+N
Rated current	6,6 A	8,7 A	12,2 A	17,4 A	17,4 A	20 A	26 A	14,5 A each phase
SYSTEM								
Maximum efficiency	>95%	>96%	>96%	>96%	>96%	>96%	>97,6%	>96%
European efficiency	>94%	>95%	>95%	>95%	>95%	>94%	>96,5%	>94%
FEATURES								
Dimensions (WxDxH) mm	315x269x120	350x302x120	350x302x135	424x366x120	430x386x135	430x530x130	430x530x130	530x430x135
Weight	8,5 Kg	11,4 Kg	12,5 Kg	16,4 Kg	19,5 Kg	27 Kg	31,5 Kg	36 Kg
Protection level	IP43	IP43	IP43	IP43	IP65	IP65	IP65	IP65

TRANSFORMER SOLAR INVERTERS

Product code	HP25	HP33	HP40	HP64	HP80	HP100
INPUT						
Recommended power of the photovoltaic field	30 kW	40 kW	50kW	80kW	100kW	125kW
Maximum direct voltage in an open circuit	800 Vcc	800 Vcc	800 Vcc	800 Vcc	800 Vcc	800 Vcc
Voltage V0@STC	540 ÷ 640 Vcc	540 ÷ 640 Vcc	540 ÷ 640 Vcc	540 ÷ 640 Vcc	540 ÷ 640 Vcc	540 ÷ 640 Vcc
MPPT Interval	330 ÷ 700 Vcc	330 ÷ 700 Vcc	330 ÷ 700 Vcc	330 ÷ 700 Vcc	330 ÷ 700 Vcc	330 ÷ 700 Vcc
Number of inputs	1	1	1	1	1	1
OUTPUT						
Rated power	25 KW	33 KW	40 KW	64 KW	80 KW	100 KW
Maximum power	28 KW	36 KW	44 KW	71 KW	88 KW	110 KW
Operating voltage	400Vca 3F	400Vca 3F	400Vca 3F	400Vca 3F	400Vca 3F	400Vca 3F
Rated current	36 A	48 A	57,8 A	92 A	115 A	144,5 A
Type of transformer	BF	BF	BF	BF	BF	BF
SYSTEM						
Maximum efficiency	95%	95%	95%	95,7%	95,3%	95,4%
European efficiency	93,28%	93,42%	93,45%	93,75%	93,96%	94,18%
FEATURES						
Dimensions (WxDxH) mm	555x720x1200	555x720x1200	555x720x1200	800x800x1900	800x800x1900	800x800x1900
Weight	300 Kg	330 Kg	420 Kg	600 Kg	650 Kg	720 Kg
Protection level	IP20	IP20	IP20	IP20	IP20	IP20

TRANSFORMERLESS SOLAR INVERTERS

QUALITY POWER DISTRIBUTION
The range of inverters for Helios Power photovoltaic plants uses high quality innovative technologies and components, having a large margin compared with normal operating conditions, and reaching a high level of reliability (Mean Time Between Failure > 100,000 hours).
These technologies and components mean that the periodic maintenance of the equipment can be avoided without compromising the operating flexibility of any photovoltaic system and any electrical grid. Helios Power inverters integrate protection against input and output overvoltage and are equipped with redundant control and protection devices, especially in the output phase (double relay with double control microprocessor), giving further guarantee of operability and continuity of operation.

HIGH CONVERSION EFFICIENCY
In small photovoltaic plants reduction of energy loss during the conversion process is essential. In the search for maximum efficiency to reduce losses, inverters of the Helios Power series up to 10kWp are made without transformers and moving parts. This construction philosophy allows for the reduction in the footprint and weight of the inverters and increases reliability over time by eliminating the parts subjected to mechanical wear. Thanks to this “transformerless” technology, Helios Power photovoltaic inverters guarantee a conversion efficiency of 97% which is amongst the highest levels in this category.

EASY INSTALLATION AND USE
Light, compact and with an attractive design, the Helios Power series inverters are easy to use and simple to install. An LCD display on the front panel provides a simple and intuitive display of all the main data: power, energy produced and any failures. The display can also show other parameters such as grid voltage, photovoltaic module voltage and grid frequency.

REDUCED NOISE
The Helios Power series of photovoltaic inverters have been designed with static electronic devices without the use of rotating components and cooling ventilators, thus reducing noise considerably.

SIMPLE COMMUNICATION
All models in the series have a standard RS232 serial connection (RS485 optional) enabling all information accessible locally on the display to be available from remote locations. The optional remote device SMARTLOG allows the acquisition and display of the main electrical parameters (voltage, frequency, current, instantaneous power and total energy transferred on the network) besides information on operation and on any inverter alarms (up to 20 units). SMARTLOG is not merely a monitoring system, but it can in turn send warning signals and information to remote places, even on GSM mobile phones or via e-mail.

MPPT DEVICE
The MPPT (Maximum Power Point Tracker) device ensures the inverter works in such a way as to make the most of the maximum power of the photovoltaic generator as a function of the solar radiation and the temperature of the cells. The MPPT system response times are so fast (100ms) that it always ensures the maximum power generated by the solar field.

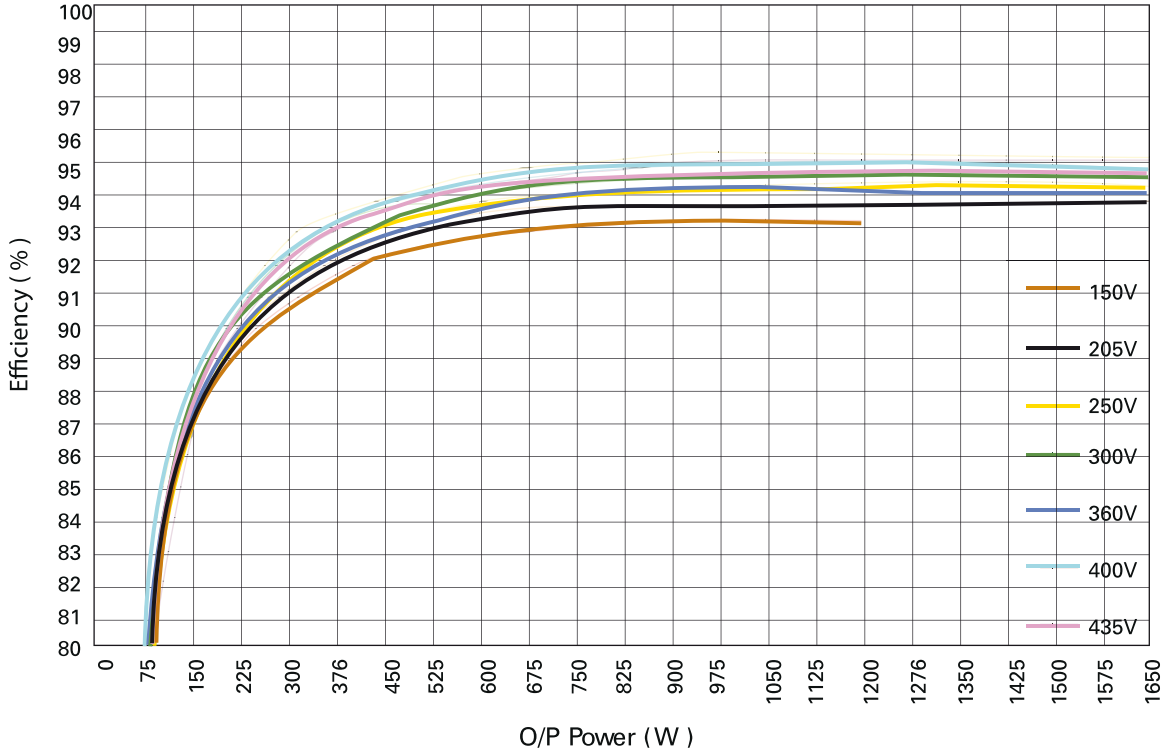
GFCI (Ground Fault Circuit Interrupter)
Helios Power series inverters are equipped with an advanced fault-protection circuit that constantly monitors the dispersion of current towards earth. In the event of an earth fault, the inverter is deactivated and the fault is shown by a red LED on the front control panel.

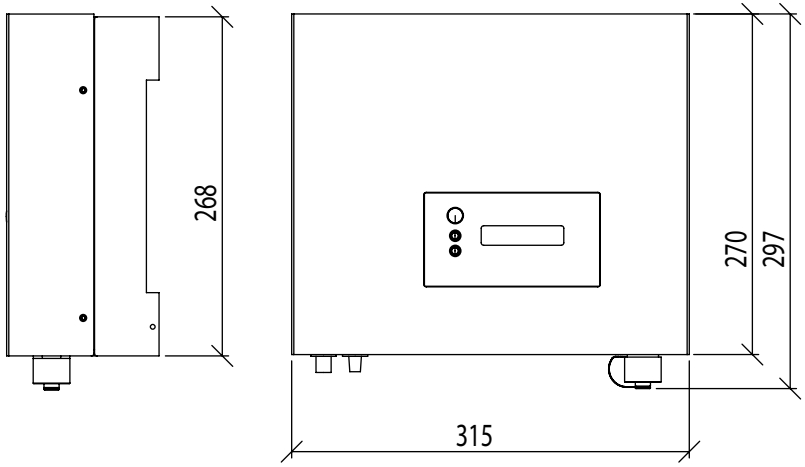
ELECTROMAGNETIC COMPATIBILITY EMC
Directives: 2004/108/EEC
Standards: EN61000

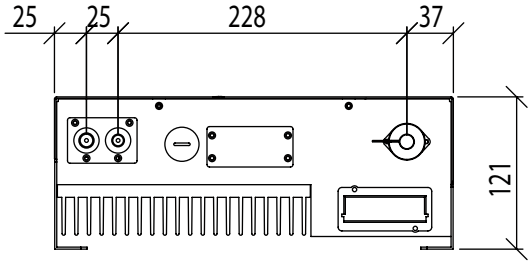
SAFETY
Directives: 2006/95/EC
Standards: IEC 62103
EN50178

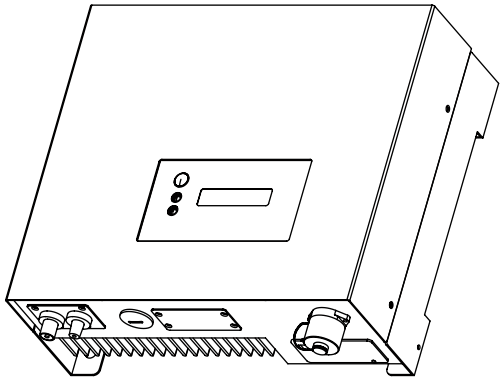
Helios Power 1500

HP 1500	
Input	
Recommended power of the photovoltaic field	1960 Wp
Maximum direct voltage in an open circuit	450 Vcc
Rated direct voltage	360 Vcc
MPPT Interval	200 ÷ 405 Vcc
Maximum input current	8,9 Acc
Voltage during system startup	120 Vcc
Full Rating Range	200 ÷ 405 Vcc
Shutdown voltage	70 Vcc
MPPT Number	1
D.C connectors	Multi-Contact type MC3
Output	
Rated power alternating current	1500 W
Maximum power alternating current	1650 W
Operating voltage	230 Vca
Operating interval	190 ÷ 260 Vca
Maximum power interval	210 ÷ 260 Vca
Frequency interval	49,7 ÷ 50,3 Hz
Maximum current	7,9 A
Current Harmonic Distorsion	(THDi) <3%
Power factor	>0,99
AC connectors	692
System	
Maximum efficiency	>95%
European efficiency	>94%
Stand-by consumption	~7 W
Night consumption	~0 W
Insulation operating protection	YES
Detecting earth leakage	YES
Heat dissipation	Convection
Operating temperature	-20°C ÷ 55°C
Storage temperature	-20°C ÷ 70°C
Humidity	0 ÷ 95% non-condensing









FEATURES

Colour: RAL 1033

Dimensions (WxDxH) mm: 315x269x120

Weight: 8,5 kg

Protection level: IP43

Acoustic noise: <35dBA

COMMUNICATION

Display: 1 row LCD, 16 characters

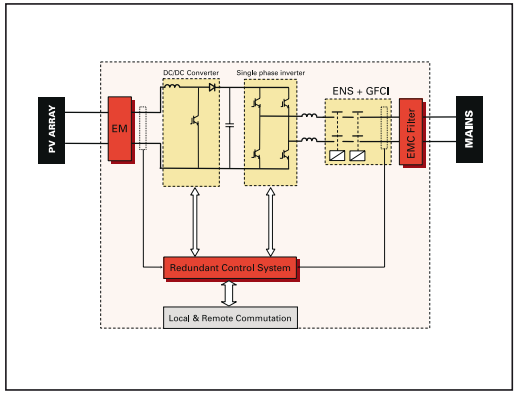
Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

Spain: Real Decreto 1663/2000

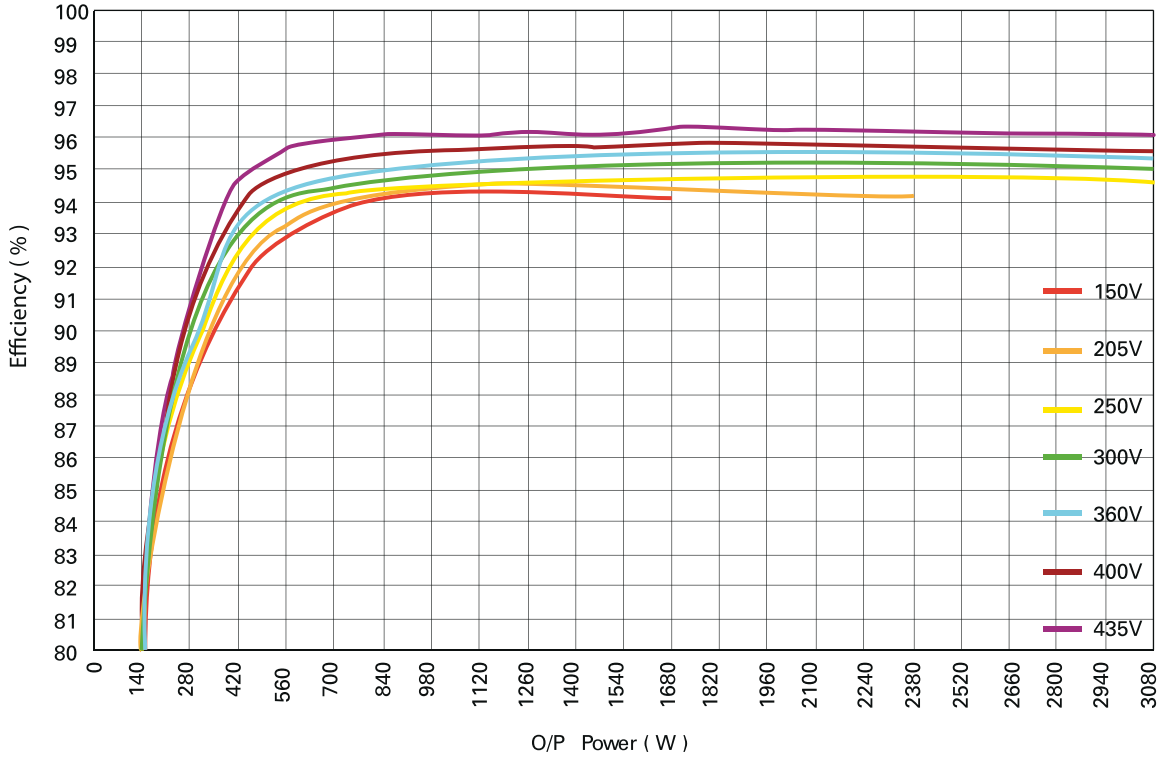
Italy: DK5940

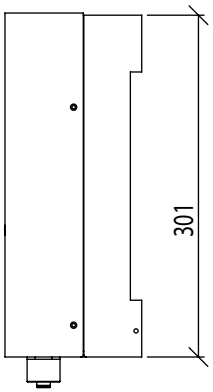
Germany: VDE 0126-1; 2006-02

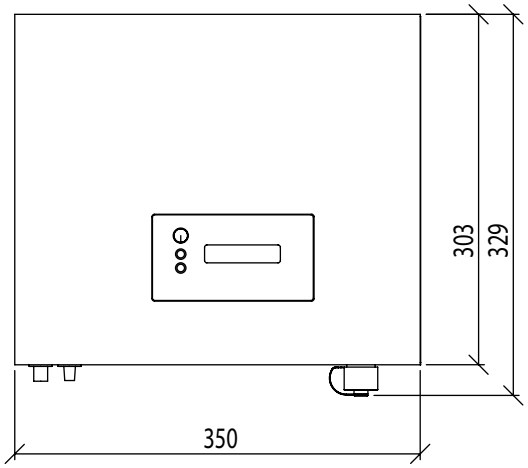


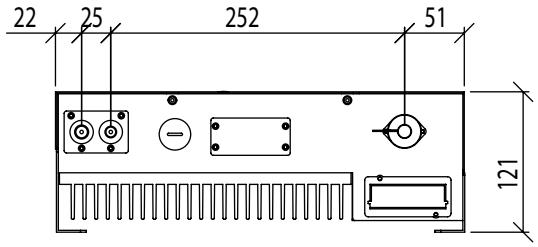
Helios Power 2000

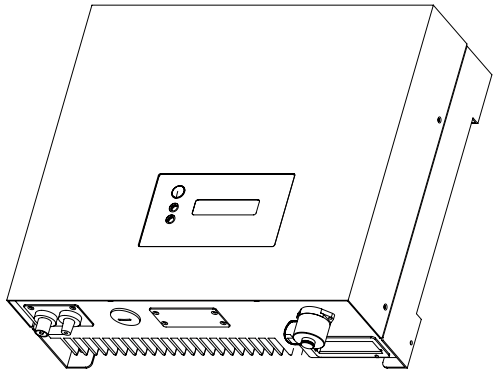
HP 2000	
Input	
Recommended power of the photovoltaic field	2600 Wp
Maximum direct voltage in an open circuit	500 Vcc
Rated direct voltage	360 Vcc
MPPT Interval	250 ÷ 450 Vcc
Maximum input current	10 Acc
Voltage during system startup	120 Vcc
Full Rating Range	250 ÷ 450 Vcc
Shutdown voltage	70 Vcc
MPPT Number	1
D.C connectors	Multi-Contact type MC3
Output	
Rated power alternating current	2000 W
Maximum power alternating current	2200 W
Operating voltage	230 Vca
Operating interval	190 ÷ 260 Vca
Maximum power interval	210 ÷ 260 Vca
Frequency interval	49,7 ÷ 50,3 Hz
Maximum current	10,5 A
Current Harmonic Distorsion	<3%
Power factor	>0,99
AC connectors	Blinder 692
System	
Maximum efficiency	>96%
European efficiency	>95%
Stand-by consumption	~7 W
Night consumption	~0 W
Insulation operating protection	YES
Detecting earth leakage	YES
Heat dissipation	Convection
Operating temperature	-20°C ÷ 55°C
Storage temperature	-20°C ÷ 70°C
Humidity	0 ÷ 95% non-condensing











FEATURES

Colour: RAL 1033

Dimensions (WxDxH) mm: 350x302x120

Weight: 11,4 kg

Protection level: IP43

Acoustic noise: <35dBA

COMMUNICATION

Display: 1 row LCD, 16 characters

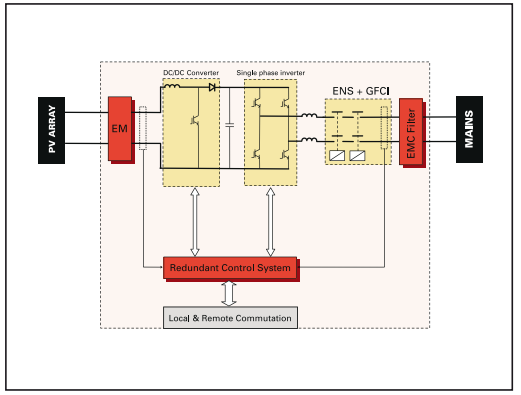
Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

Spain: Real Decreto 1663/2000

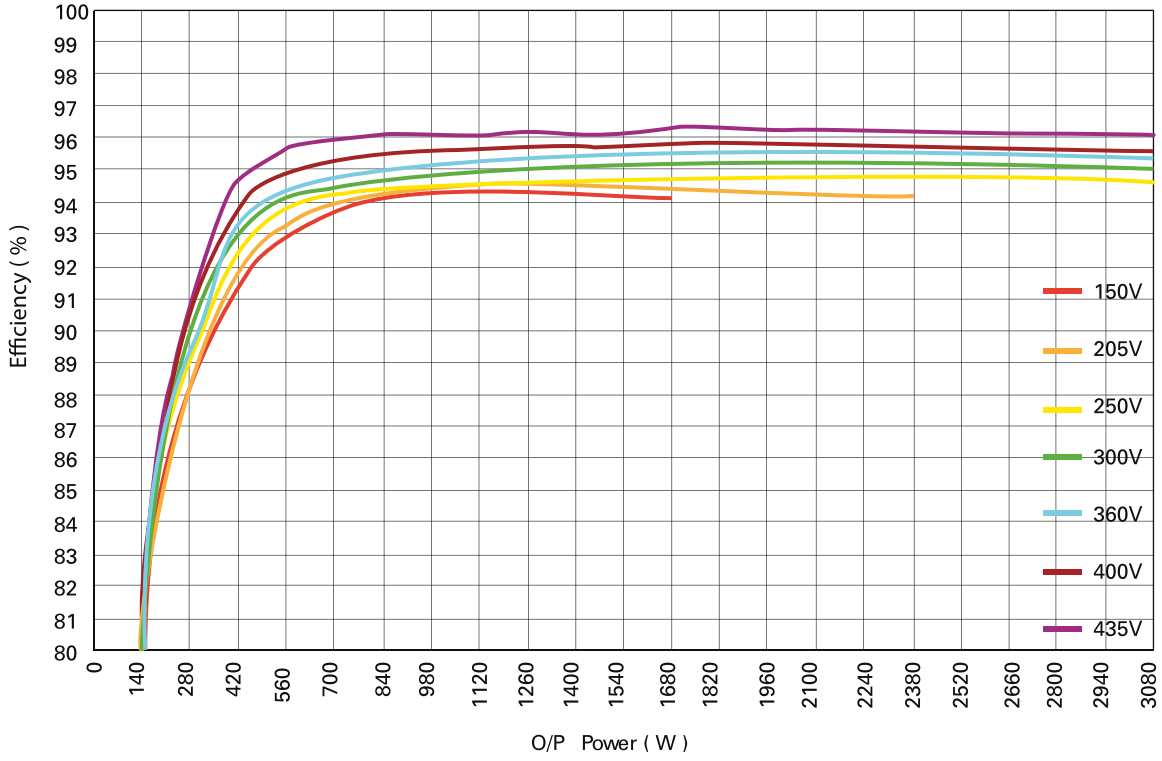
Italy: DK5940

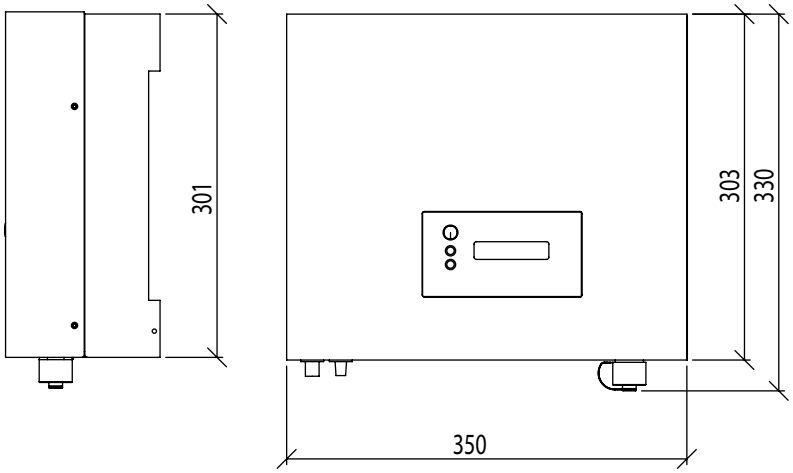
Germany: VDE 0126-1; 2006-02

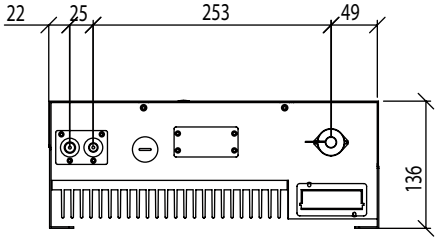


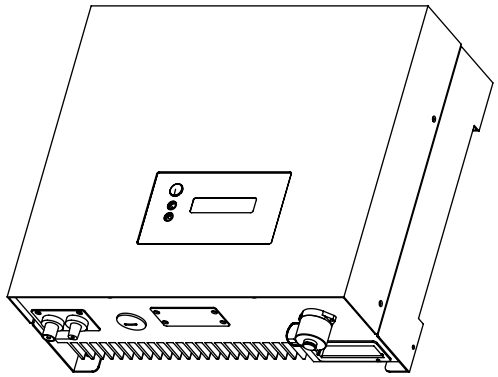
Helios Power 2800

HP 2800	
Input	
Recommended power of the photovoltaic field	3650 Wp
Maximum direct voltage in an open circuit	500 Vcc
Rated direct voltage	360 Vcc
MPPT Interval	250 ÷ 450 Vcc
Maximum input current	13 Acc
Voltage during system startup	120 Vcc
Full Rating Range	250 ÷ 450 Vcc
Shutdown voltage	70 Vcc
MPPT Number	1
D.C connectors	Multi-Contact type MC3
Output	
Rated power alternating current	2800 W
Maximum power alternating current	3000 W
Operating voltage	230 Vca
Operating interval	190 ÷ 260 Vca
Maximum power interval	210 ÷ 260 Vca
Frequency interval	49,7 ÷ 50,3 Hz
Maximum current	14,3 A
Current Harmonic Distorsion	<3%
Power factor	>0,99%
AC connectors	Blinder 692
System	
Maximum efficiency	>96%
European efficiency	>95%
Stand-by consumption	~7 W
Night consumption	~0 W
Insulation operating protection	YES
Detecting earth leakage	YES
Heat dissipation	Convection
Operating temperature	-20°C ÷ 55°C
Storage temperature	-20°C ÷ 70°C
Humidity	0 ÷ 95% non-condensing









FEATURES

Colour: RAL 1033

Dimensions (WxDxH) mm: 350x302x135

Weight: 12,5 kg

Protection level: IP43

Acoustic noise: <35dBA

COMMUNICATION

Display: 1 row LCD, 16 characters

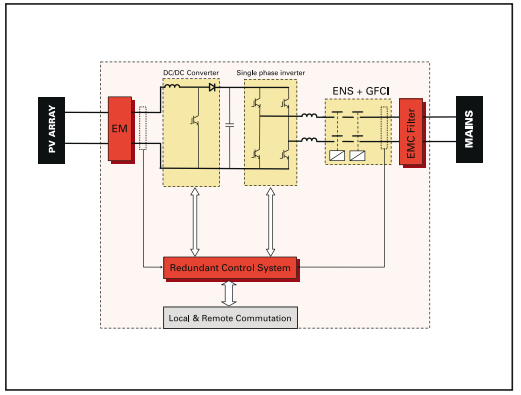
Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

Spain: Real Decreto 1663/2000

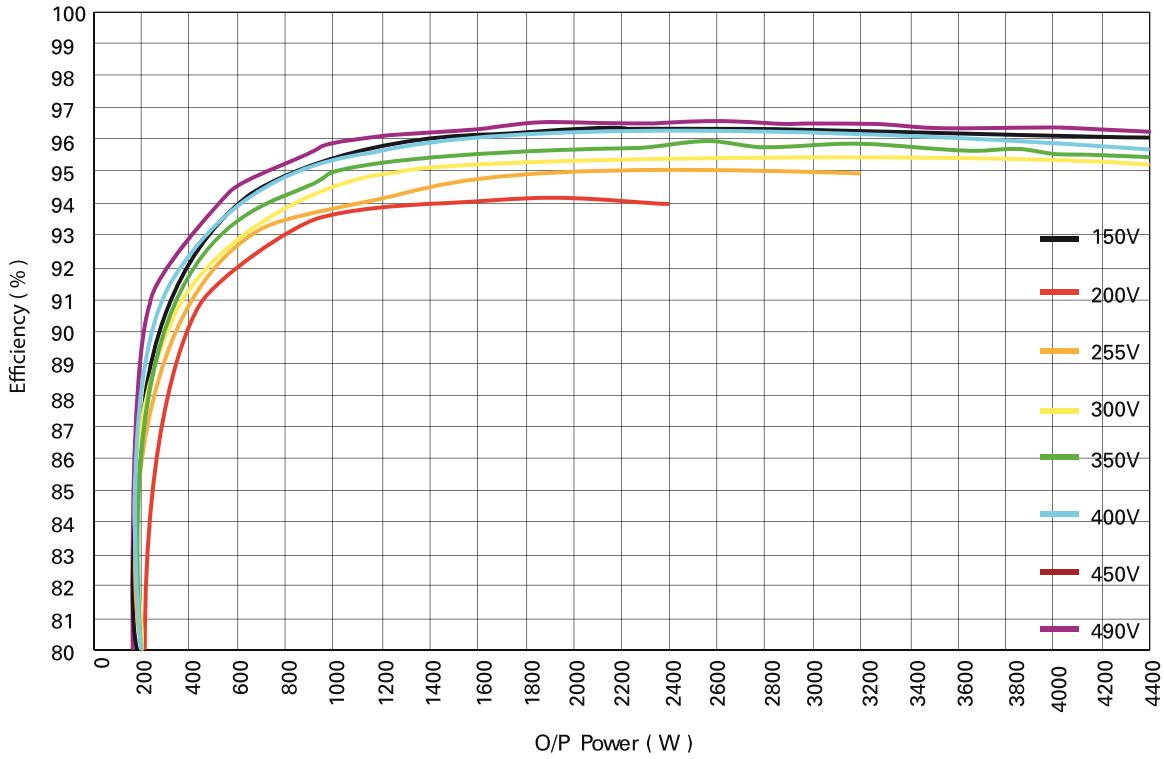
Italy: DK5940

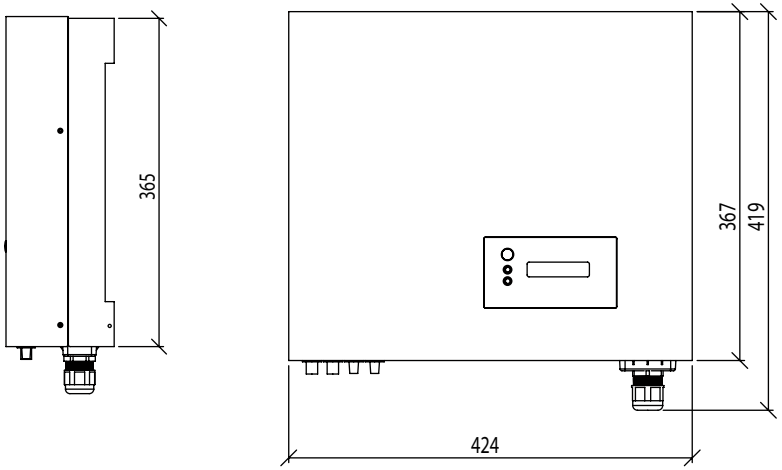
Germany: VDE 0126-1; 2006-02

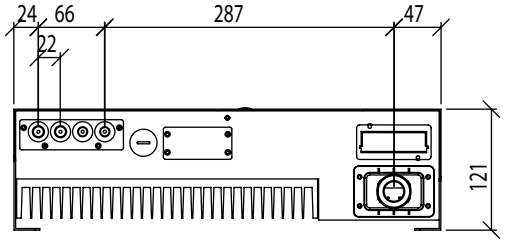


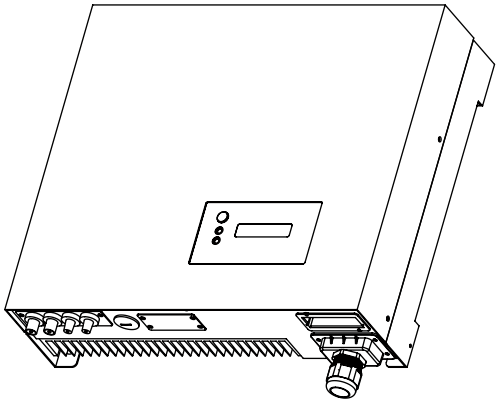
Helios Power 4000

HP 4000	
Input	
Recommended power of the photovoltaic field	5200 W
Maximum direct voltage in an open circuit	500 Vcc
Rated direct voltage	360 Vcc
MPPT Interval	250 ÷ 450 Vcc
Maximum input current	20 Acc
Voltage during system startup	120 Vcc
Full Rating Range	250 ÷ 450 Vcc
Shutdown voltage	70 Vcc
MPPT Number	1
D.C connectors	Multi-Contact type MC3
Output	
Rated power alternating current	4000 W
Maximum power alternating current	4400 W
Operating voltage	230 Vca
Operating interval	190 ÷ 260 Vca
Maximum power interval	210 ÷ 260 Vca
Frequency interval	49,7 ÷ 50,3 Hz
Maximum current	20 A
Current Harmonic Distorsion	<3%
Power factor	>0,99%
Galvanic separation	NO
AC connectors	Terminal blocks
System	
Maximum efficiency	>96%
European efficiency	>95%
Stand-by consumption	~7 W
Night consumption	~0 W
Insulation operating protection	YES
Detecting earth leakage	YES
Heat dissipation	Convection
Operating temperature	-20°C ÷ 55°C
Storage temperature	-20°C ÷ 70°C
Humidity	0 ÷ 95% non-condensing









FEATURES

Colour: RAL 1033

Dimensions (WxDxH): 424x366x120

Weight: 16,4 kg

Protection level: IP43

Acoustic noise: <35dBA

COMMUNICATION

Display: 1 row LCD, 16 characters

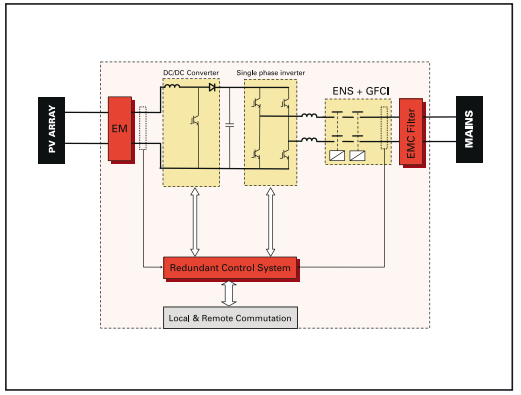
Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

Spain: Real Decreto 1663/2000

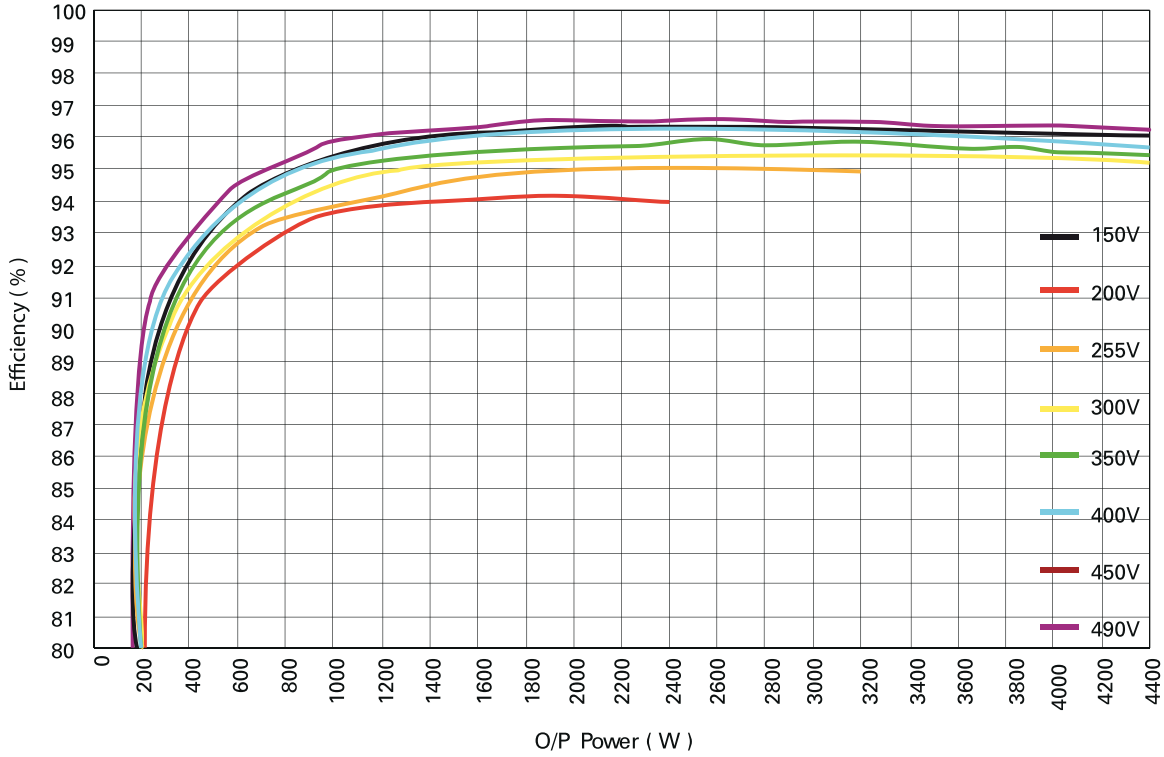
Italy: DK5940

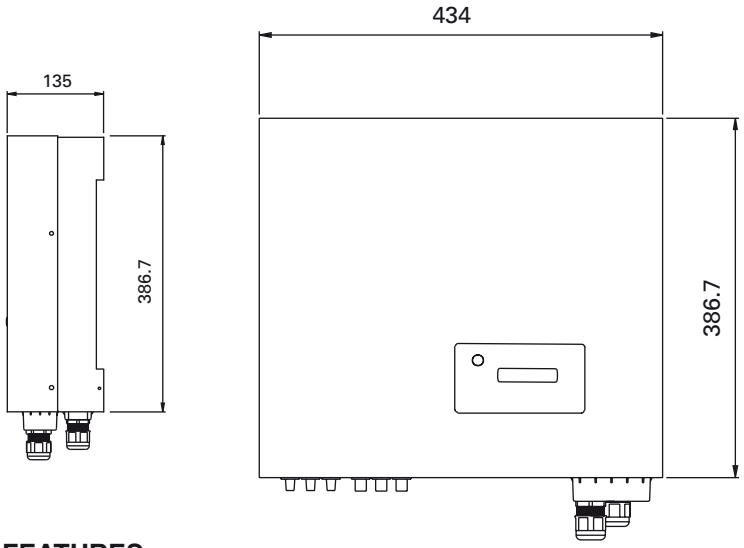
Germany: VDE 0126-1; 2006-02

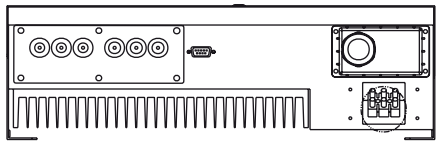


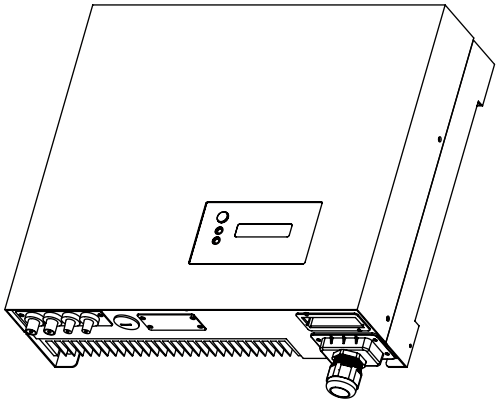
Helios Power 4065

HP 4065	
Input	
Recommended power of the photovoltaic field	5200 Wp
Maximum direct voltage in an open circuit	500 Vcc
Rated direct voltage	360 Vcc
MPPT Interval	250 ÷ 450 Vcc
Maximum input current	20 Acc
Voltage during system startup	120 Vcc
Full Rating Range	250 ÷ 450 Vcc
Shutdown voltage	70 Vcc
MPPT Number	1
D.C connectors	Multi-Contact type MC3
Output	
Rated power alternating current	4000 W
Maximum power alternating current	4400 W
Operating voltage	230 Vca
Operating interval	190 ÷ 260 Vca
Maximum power interval	210 ÷ 260 Vca
Frequency interval	49,7 ÷ 50,3 Hz
Maximum current	20 A
Current Harmonic Distorsion	<3%
Power factor	>0,99
AC connectors	Terminal blocks
System	
Maximum efficiency	>96%
European efficiency	>95%
Stand-by consumption	~7 W
Night consumption	~0 W
Insulation operating protection	YES
Detecting earth leakage	YES
Heat dissipation	Convection
Operating temperature	-20°C ÷ 55°C
Storage temperature	-20°C ÷ 70°C
Humidity	0 ÷ 95% non-condensing









FEATURES

Colour: RAL 1033

Dimensions (WxDxH) mm: 430x386x135

Weight: 19,5 kg

Protection level: IP65

Acoustic noise: <35dBA

COMMUNICATION

Display: 1 row LCD, 16 characters

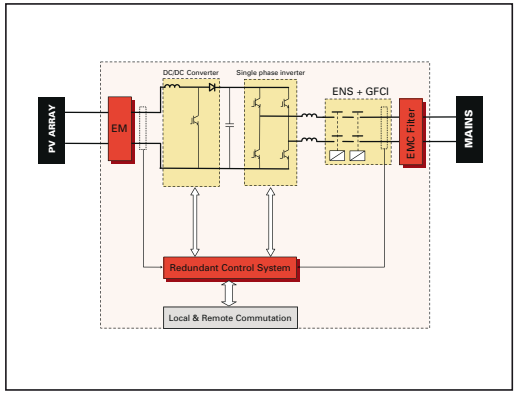
Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

Spain: Real Decreto 1663/2000

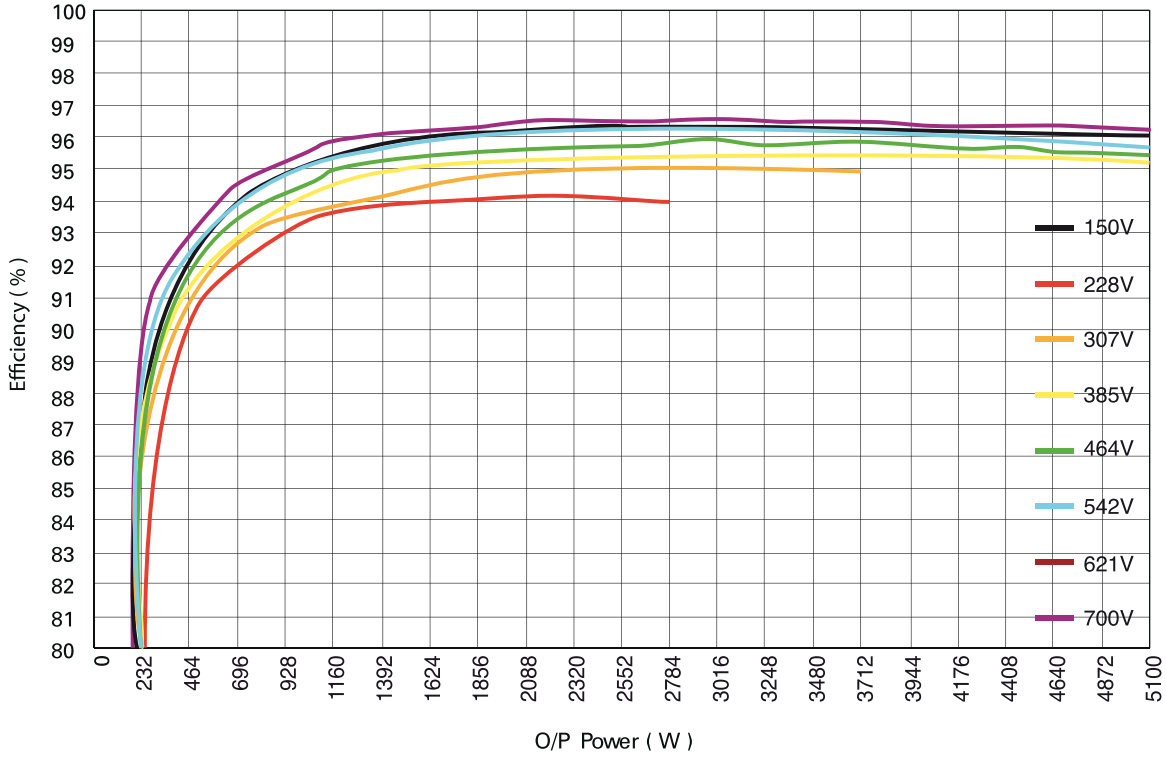
Italy: DK5940

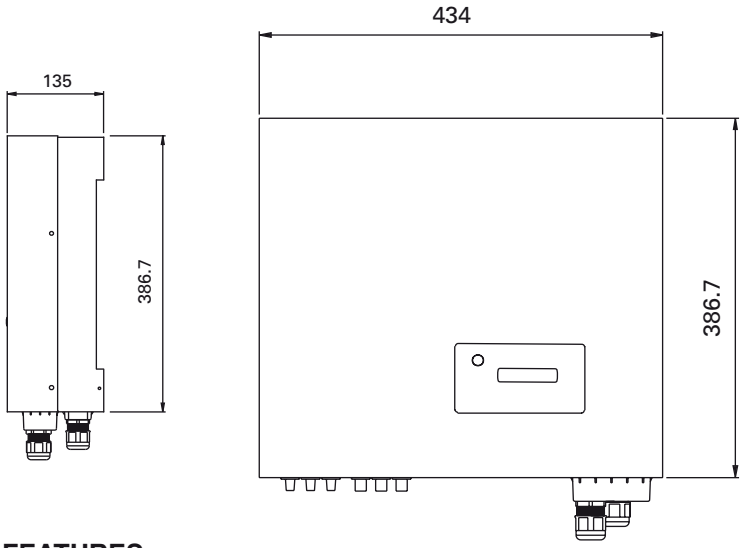
Germany: VDE 0126-1; 2006-02

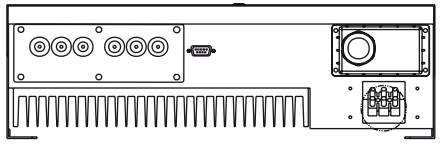


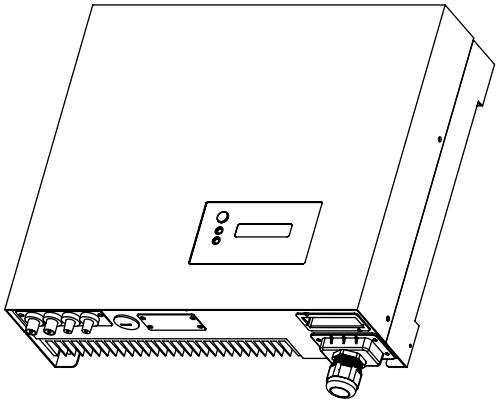
Helios Power 6065

HP 6065	
Input	
Recommended power of the photovoltaic field	6000 Wp
Maximum direct voltage in an open circuit	750 Vcc
Rated direct voltage	600 Vcc
MPPT Interval	190 ÷ 700 Vcc
Maximum input current	8,5A per tracker
Voltage during system startup	100 Vcc
Full Rating Range	450 ÷ 750 Vcc
Shutdown voltage	80 Vcc
MPPT Number	3
D.C connectors	Multi-Contact type MC3
Output	
Rated power alternating current	4600 W
Maximum power alternating current	5100 W
Operating voltage	230 Vca
Operating interval	190 ÷ 260 Vca
Maximum power interval	210 ÷ 260 Vca
Frequency interval	49,7 ÷ 50,3 Hz
Maximum current	26 A
Current Harmonic Distorsion	<3%
Power factor	>0,99
AC connectors	Terminal blocks
System	
Maximum efficiency	>96%
European efficiency	>94%
Stand-by consumption	~7 W
Night consumption	~0 W
Insulation operating protection	YES
Detecting earth leakage	YES
Heat dissipation	Convection
Operating temperature	-20°C ÷ 55°C
Storage temperature	-20°C ÷ 70°C
Humidity	0 ÷ 95% non-condensing









FEATURES

Colour: RAL 1033

Dimensions (WxDxH) mm: 430x530x130

Weight: 27 kg

Protection level: IP65

Acoustic noise: <35dBA

COMMUNICATION

Display: 1 row LCD, 16 characters

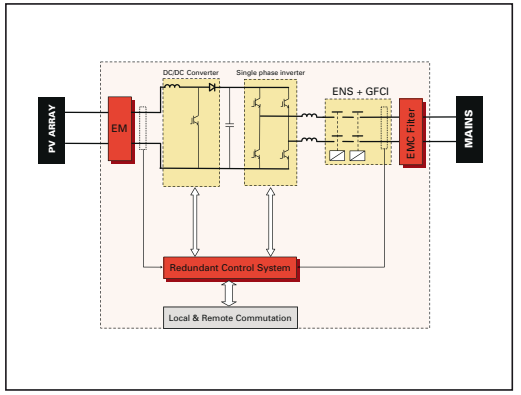
Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

Spain: Real Decreto 1663/2000

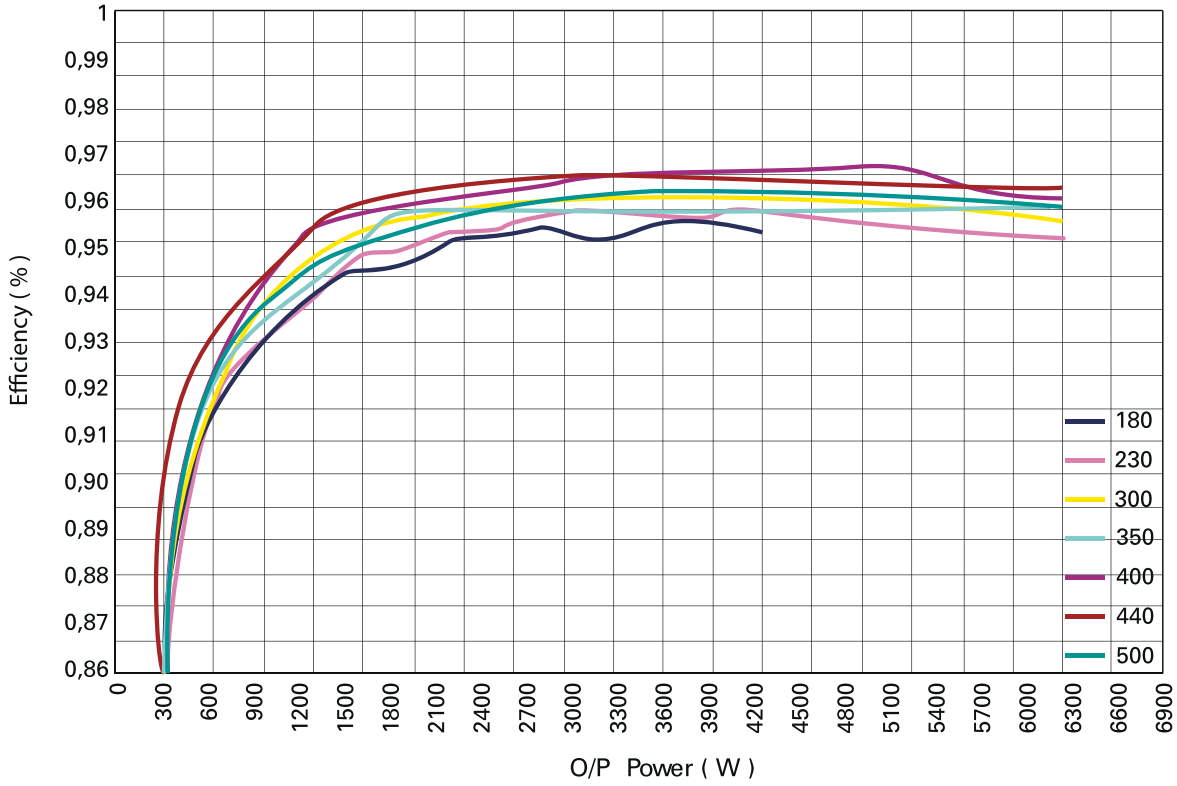
Italy: DK5940

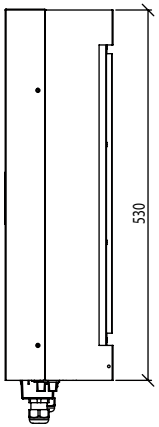
Germany: VDE 0126-1; 2006-02

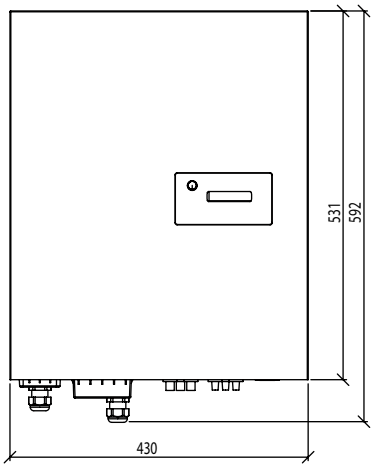


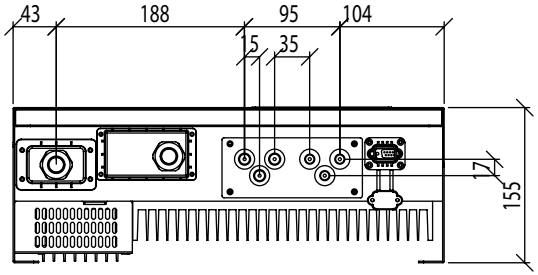
Helios Power 6165

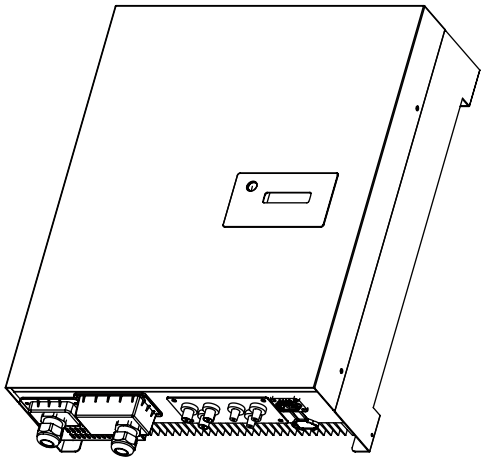
HP 6165	
Input	
Recommended power of the photovoltaic field	7500 Wp
Maximum direct voltage in an open circuit	550 Vcc
Rated direct voltage	360 Vcc
MPPT Interval	180 ÷ 550 Vcc
Maximum input current	27,5 Acc
Voltage during system startup	150 Vcc
Full Rating Range	230 ÷ 500 Vcc
Shutdown voltage	100 Vcc
MPPT Number	1
D.C connectors	Multi-Contact type MC3
Output	
Rated power alternating current	6000 W
Maximum power alternating current	6000 W
Operating voltage	230 Vca
Operating interval	190 ÷ 260 Vca
Maximum power interval	210 ÷ 260 Vca
Frequency interval	49,7 ÷ 50,3 Hz
Maximum current	28,6 A
Current Harmonic Distorsion	<3%
Power factor	>0,99
AC connectors	Terminal blocks
System	
Maximum efficiency	>97,6%
European efficiency	>96,5%
Stand-by consumption	~8 W
Night consumption	~0 W
Insulation operating protection	YES
Detecting earth leakage	YES
Heat dissipation	Convection
Operating temperature	-20°C ÷ 55°C
Storage temperature	-20°C ÷ 70°C
Humidity	0 ÷ 95% non-condensing











FEATURES

Colour: RAL 1033

Dimensions (WxDxH) mm: 430x530x130

Weight: 31,5 kg

Protection level: IP65

Acoustic noise: <35dBA

COMMUNICATION

Display: 1 row LCD, 16 characters

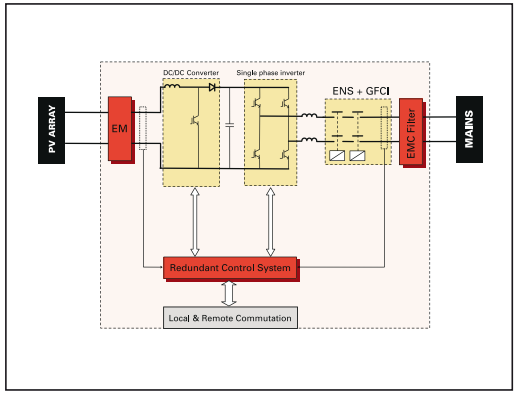
Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

Spain: Real Decreto 1663/2000

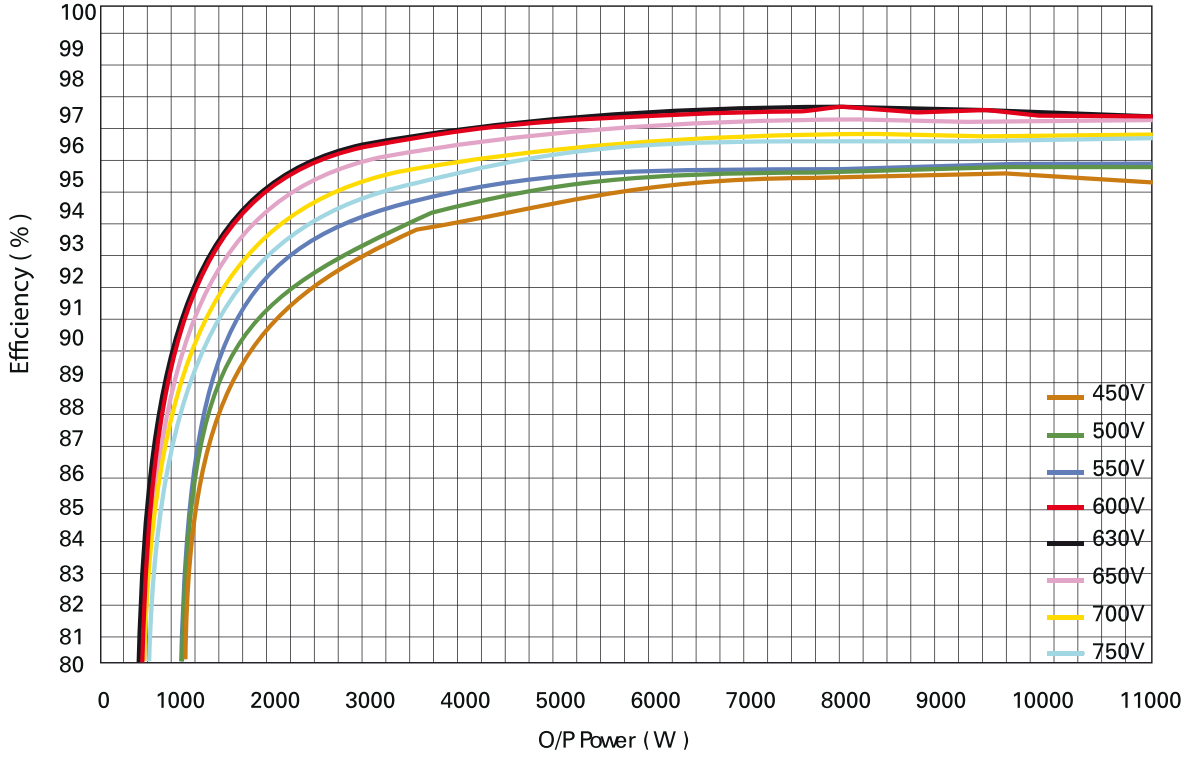
Italy: DK5940

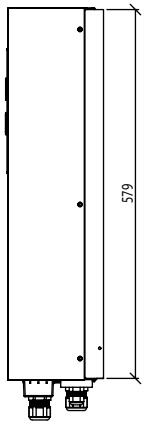
Germany: VDE 0126-1; 2006-02

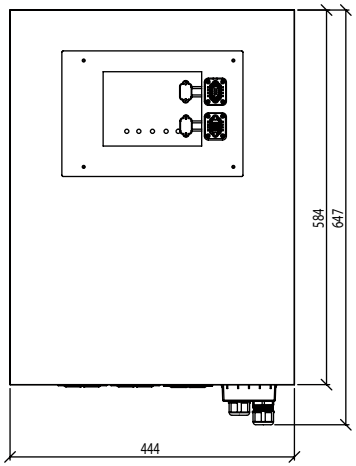


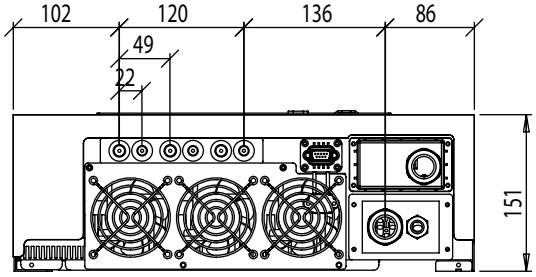
Helios Power 10065

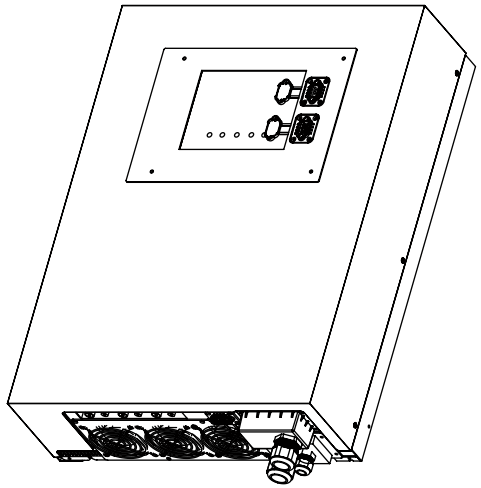
HP 10065	
Input	
Recommended power of the photovoltaic field	5500 W per traker (max 13500 W)
Maximum direct voltage in an open circuit	800 Vcc
Rated direct voltage	640 Vcc
MPPT Interval	300 ÷ 800 Vcc
Maximum input current	13 Acc per traker Acc
Voltage during system startup	260 Vcc
Full Rating Range	420 ÷ 800 Vcc
Shutdown voltage	200 Vcc
MPPT Number	3
D.C connectors	Multi-Contact type MC3
Output	
Rated power alternating current	10000 W
Maximum power alternating current	11000 W
Operating voltage	400 Vca
Operating interval	320 ÷ 480 Vca
Maximum power interval	330 ÷ 450 Vca
Frequency interval	49,7 ÷ 50,3 Hz
Maximum current	19,3A each phase
Current Harmonic Distorsion	<3%
Power factor	>0,99%
Galvanic separation	NO
AC connectors	Terminal blocks
System	
Maximum efficiency	>96%
European efficiency	>94%
Stand-by consumption	<30 W
Night consumption	<5 W
Insulation operating protection	YES
Detecting earth leakage	YES
Heat dissipation	Fans
Operating temperature	-20°C ÷ 55°C
Storage temperature	-20°C ÷ 70°C
Humidity	0 ÷ 95% non-condensing











FEATURES

Colour: RAL 1033

Dimensions (WxDxH) mm: 530x430x135

Weight: 36 kg

Protection level: IP65

Acoustic noise: <45dBA

COMMUNICATION

Display: Display: graphic 3 colors

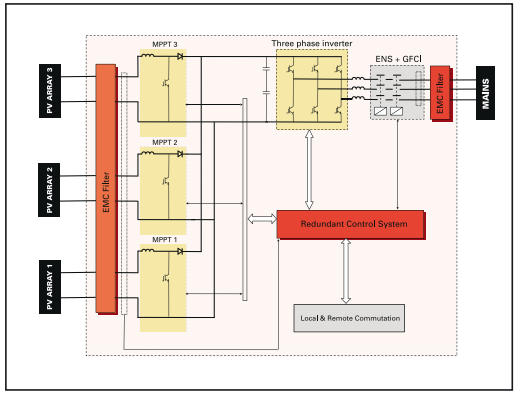
Communication interface: data downloading by USB; RS232, RS485 and Ethernet options (slot version)

CERTIFICATIONS

Spain: Real Decreto 1663/2000

Italy: DK5940

Germany: VDE 0126-1; 2006-02



SOLAR INVERTERS WITH TRANSFORMER

Helios Power inverters with transformers allow direct connection to the low voltage distribution grid guaranteeing the galvanic separation with respect to the DC current plant. The ample rating of the transformer and the other inverter components provides very high conversion efficiency and ensures it is one of the most efficient devices of its kind.

MAXIMUM ENERGY AND SAFETY

The Maximum Power Point (MPPT) research algorithm implemented in the control system of Helios Power inverters allows full use of the photovoltaic generator in any radiation and temperature conditions, making the plant work at constant maximum efficiency. In the absence of solar radiation the converter goes on standby and resumes normal operation when there is radiation again. This feature reduces autoconsumption to a minimum and maximizes energy efficiency. All these design features, careful choice of components and guaranteed quality of production according to standard ISO9001, make the three-phase inverters with transformers of the Helios Power series extremely efficient and reliable guaranteeing maximum energy production.

ADVANCED COMMUNICATIONS

The Helios Power series inverters have an intuitive man-machine interface, made up of an integrated display and keyboard with which it is possible to control the photovoltaic system's main parameters and to interact with it to control its operation. The display and keyboard facilitate diagnosis and solutions to any operating problems at local level while interaction with the remote inverter is possible through the most common of media (local serial link, Local Area Network, GSM, etc.) by means of RS232/RS485 communication ports, to know the plant's status and to assess statistics about its operation. Communication interfaces, together with the relative software, are common to the family of transformerless inverters, where more detailed information can be obtained.

EASY INSTALLATION AND MAINTENANCE
The footprint of these devices has been considerably reduced and there is no need to leave spaces at the side or back of the equipment since the electronics and power components are fully accessible from the front. Full automatic operation ensures ease of use and facilitates installation and startup, thus avoiding errors during installation and configuration which could lead to failures or reduced plant productivity.

CONFORMANCE
Helios Power inverters with low frequency isolation transformers conform fully with European safety standards LVD and EMC and with Italian and international regulations regarding parallel connection to the public mains.

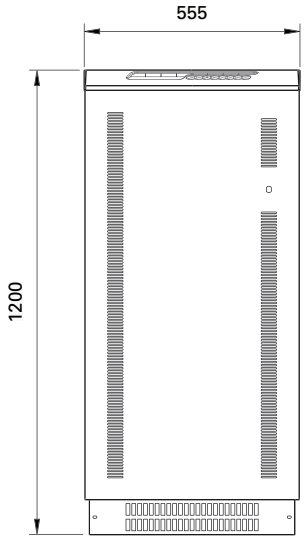
ELECTROMAGNETIC COMPATIBILITY EMC
Directives: 2004/108/EC
Standards: EN61000

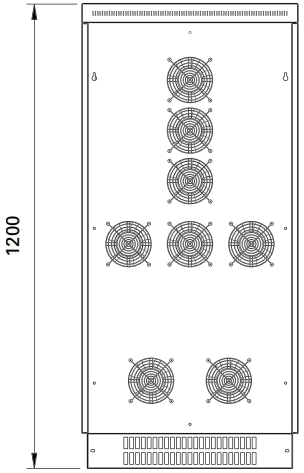
SAFETY
Directives: 2006/95/EC
Standards: IEC 62103
EN50178

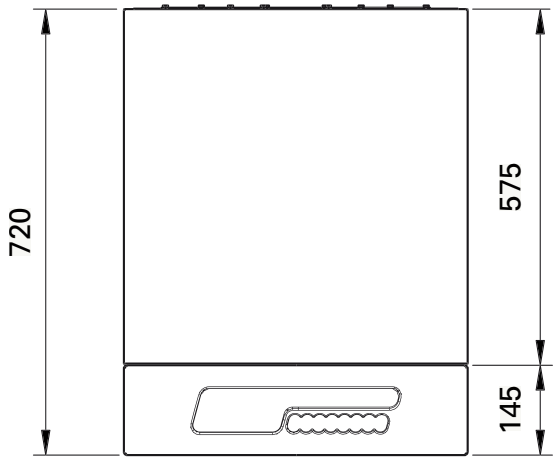
PERSONALIZED SOLUTIONS
RIELLO UPS is able to supply Helios Power series inverters specific to client's needs on request. To give an example, in order to increase overall plant efficiency there are models without an integrated transformer for use with plants connected to a medium voltage distribution network. It is also possible to manufacture cabinets with IP protection levels greater than the standard level for specific installation environments.

Helios Power 25

HP 25	
Input	
Recommended power of the photovoltaic field	max 30 kWp
Recommended power of the photovoltaic field	min 20 kWp
Maximum direct voltage in an open circuit	800 Vcc
Recommended Voltage V0@STC	540-640 Vcc
MPPT Interval	330 ÷ 700 Vcc
Maximum input current	80 A
Voltage during system startup	390 V
Number of inputs	1
Output	
Rated power	25 KW
Maximum power	28 KW
Operating voltage	400Vca 3F +/-15%
Rated frequency	50Hz
Frequency interval	+/- 1%
Rated current	36 A
Maximum current	46 A
Current Harmonic Distorsion	<3%
Power factor	>0,99
Type of transformer	BF
System	
Maximum efficiency	95%
European efficiency	>93,28%
Stand-by consumption	<40 W
Night consumption	<40 W
Insulation operating protection	YES
Heat dissipation	max 1366 kCal/h
Operating temperature	0°C ÷ 45°C
Storage temperature	-20 +70°C
Humidity	< 95%







FEATURES

Colour: RAL 7035

Dimensions (WxDxH) mm: 555x720x1200

Weight: 300 kg

Protection level: IP20

Acoustic noise: <60dBA

COMMUNICATION

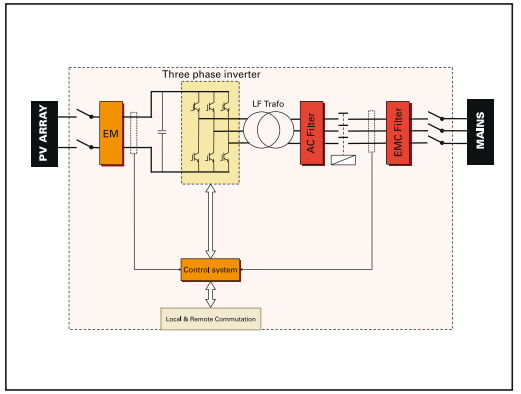
Display: 2 row LCD, 40 characters

Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

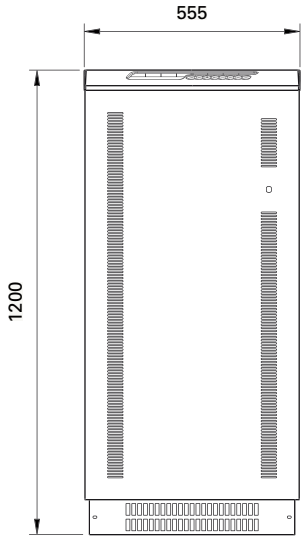
Spain: Real Decreto 1663/2000

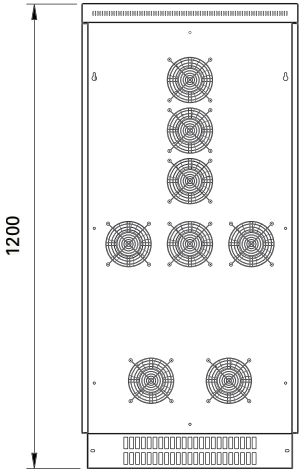
Italy: DK5940

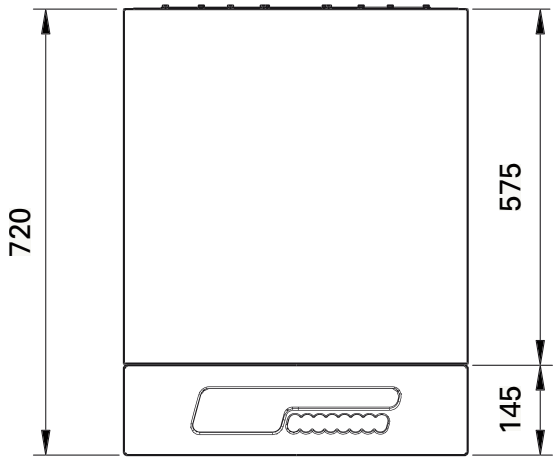


Helios Power 33

HP 33	
Input	
Recommended power of the photovoltaic field	max 40 kW
Recommended power of the photovoltaic field	max 30 kW
Maximum direct voltage in an open circuit	800 Vcc
Recommended Voltage V0@STC	540-640V
MPPT Interval	330 ÷ 700 Vcc
Maximum input current	105 A
Voltage during system startup	390 V
Number of inputs	1
Output	
Rated power	33 KW
Maximum power	36 KW
Operating voltage	400Vca 3F +/-15%
Rated frequency	50Hz
Frequency interval	+/- 1%
Rated current	48 A
Maximum current	60 A
Current Harmonic Distorsion	<3%
Power factor	>0,99
Type of transformer	BF
System	
Maximum efficiency	95%
European efficiency	>93,42%
Stand-by consumption	<40 W
Night consumption	<40 W
Insulation operating protection	YES
Heat dissipation	max 1791 kCal/h
Operating temperature	0°C ÷ 45°C
Storage temperature	-20 +70°C
Humidity	< 95%







FEATURES

Colour:RAL 7035

Dimensions (WxDxH) mm: 555x720x1200

Weight: 330 kg

Protection level: IP20

Acoustic noise: <60dBA

COMMUNICATION

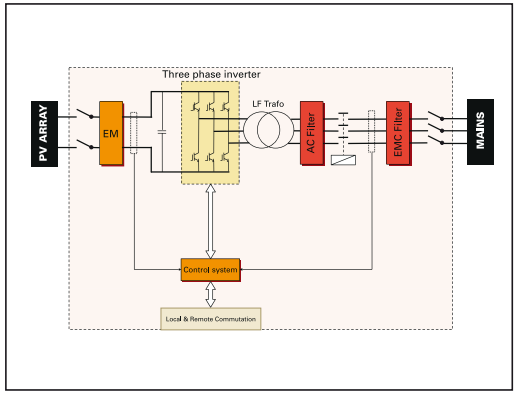
Display: 2 row LCD, 40 characters

Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

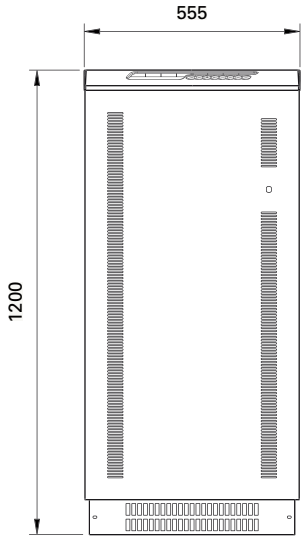
Spain: Real Decreto 1663/2000

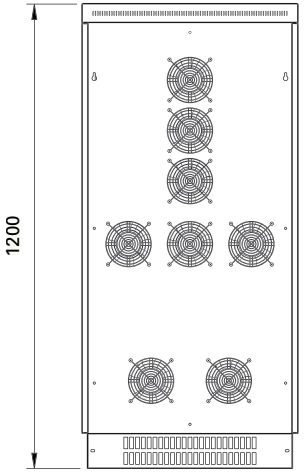
Italy: DK5940

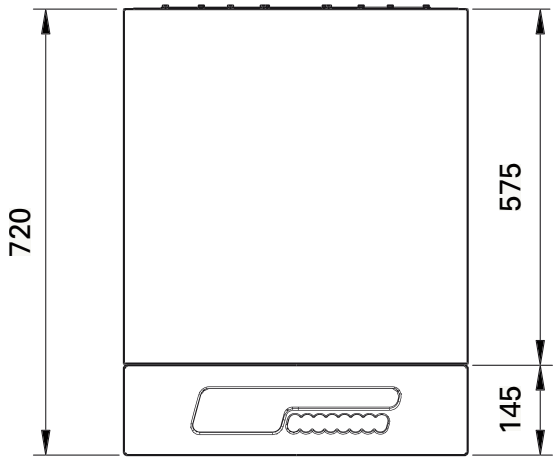


Helios Power 40

HP 40	
Input	
Recommended power of the photovoltaic field	max 50 kWp
Recommended power of the photovoltaic field	min 30 kWp
Maximum direct voltage in an open circuit	800 Vcc
Recommended Voltage V0@STC	540-640 Vcc
MPPT Interval	330 ÷ 700 Vcc
Maximum input current	130 A
Voltage during system startup	N.A.
Number of inputs	1
Output	
Rated power	40 KW
Maximum power	44 kW
Operating voltage	400Vca 3F +/-15%
Rated frequency	50Hz
Frequency interval	+/- 1%
Rated current	57,8 A
Maximum current	70,6 A
Current Harmonic Distorsion	<3%
Power factor	>0,98
Type of transformer	BF
System	
Maximum efficiency	95%
European efficiency	>93,2%
Stand-by consumption	<40 W
Night consumption	<40 W
Insulation operating protection	YES
Heat dissipation	max 2188 kCal/h
Operating temperature	0°C ÷ 50°C
Storage temperature	-20 +70°C
Humidity	< 95%







FEATURES

Colour: RAL 7035

Dimensions (WxDxH) mm: 555x720x1200

Weight: 420 kg

Protection level: IP20

Acoustic noise: <60dBA

COMMUNICATION

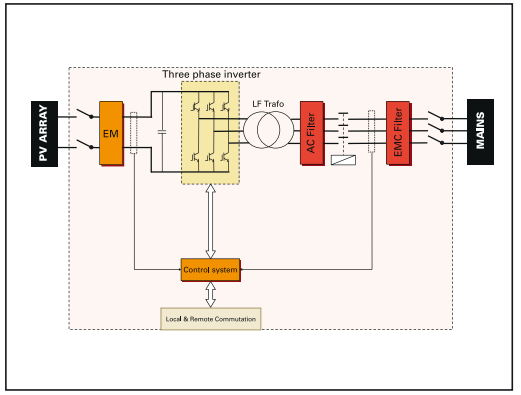
Display: 2 row LCD, 40 characters

Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

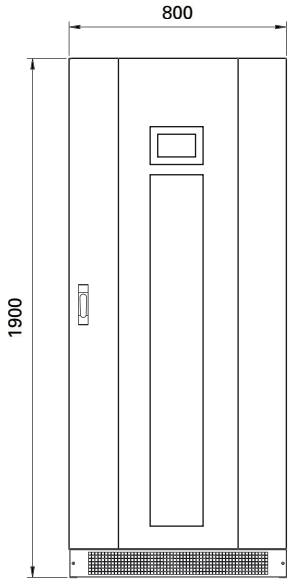
Spain: Real Decreto 1663/2000

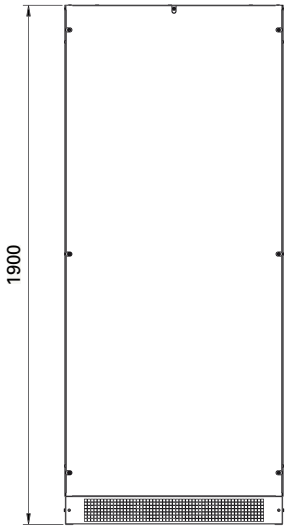
Italy: DK5940

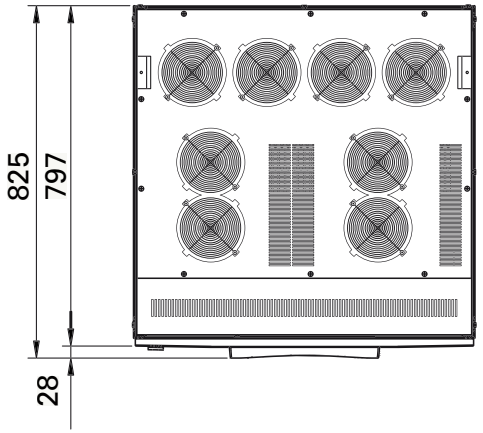


Helios Power 64

HP 64	
Input	
Recommended power of the photovoltaic field	max 80 kWp
Recommended power of the photovoltaic field	min 55 kWp
Maximum direct voltage in an open circuit	800 Vcc
Recommended Voltage V0@STC	540-640V
MPPT Interval	330 ÷ 700 Vcc
Maximum input current	205 A
Voltage during system startup	390 V
Number of inputs	1
Output	
Rated power	64 KW
Maximum power	71 KW
Operating voltage	400Vca 3F +/-15%
Rated frequency	50Hz
Frequency interval	+/- 1%
Rated current	92 A
Maximum current	117 A
Current Harmonic Distorsion	<3%
Power factor	>0,99
Type of transformer	BF
System	
Maximum efficiency	95%
European efficiency	>93,75%
Stand-by consumption	<40 W
Night consumption	<40 W
Insulation operating protection	YES
Heat dissipation	max 2835 kCal/h
Operating temperature	0°C ÷ 45°C
Storage temperature	-20 +70°C
Humidity	< 95%







FEATURES

Colour: RAL 7035

Dimensions (WxDxH) mm: 800x800x1900

Weight: 600 kg

Protection level: IP20

Acoustic noise: <68dBA

COMMUNICATION

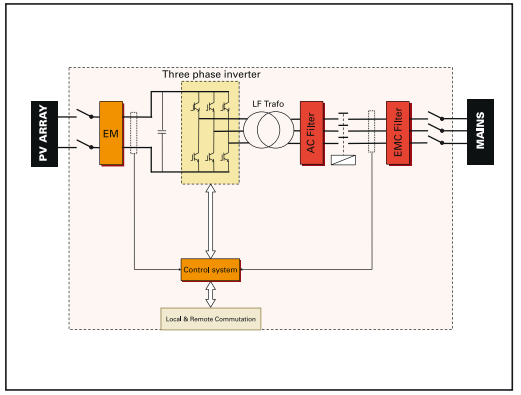
Display: 2 row LCD, 40 characters

Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

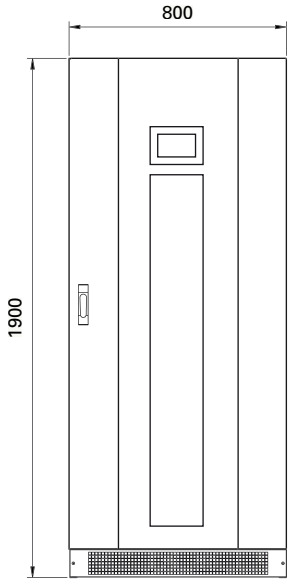
Spain: Real Decreto 1663/2000

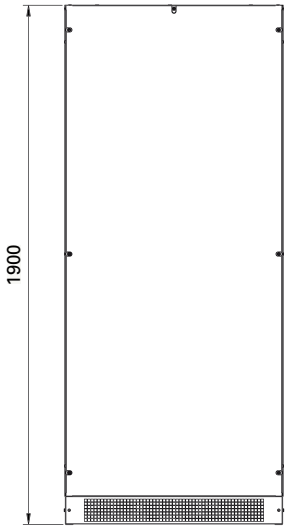
Italy: DK5940

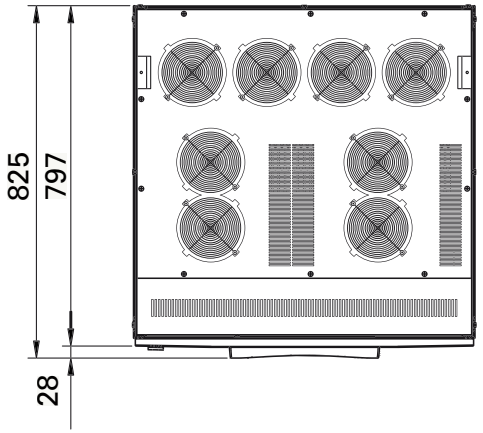


Helios Power 80

HP 80	
Input	
Recommended power of the photovoltaic field	max 100 kWp
Recommended power of the photovoltaic field	max 70 kWp
Maximum direct voltage in an open circuit	800 Vcc
Recommended Voltage V0@STC	540-640V
MPPT Interval	330 ÷ 700 Vcc
Maximum input current	260 A
Voltage during system startup	390 V
Number of inputs	1
Output	
Rated power	80 KW
Maximum power	88 KW
Operating voltage	400Vca 3F +/-15%
Rated frequency	50Hz
Frequency interval	+/- 1%
Rated current	115 A
Maximum current	146 A
Current Harmonic Distorsion	<3%
Power factor	>0,99
Type of transformer	BF
System	
Maximum efficiency	95%
European efficiency	>93,96%
Stand-by consumption	<40 W
Night consumption	<40 W
Insulation operating protection	YES
Heat dissipation	max 3870 kCal/h
Operating temperature	0°C ÷ 45°C
Storage temperature	-20 +70°C
Humidity	< 95%







FEATURES

Colour: RAL 7035

Dimensions (WxDxH) mm: 800x800x1900

Weight: 650 kg

Protection level: IP20

Acoustic noise: <68dBA

COMMUNICATION

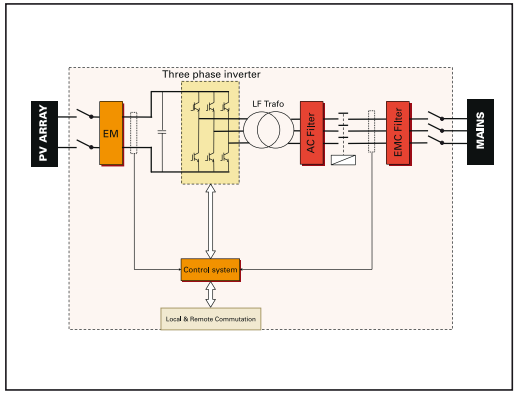
Display: 2 row LCD, 40 characters

Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

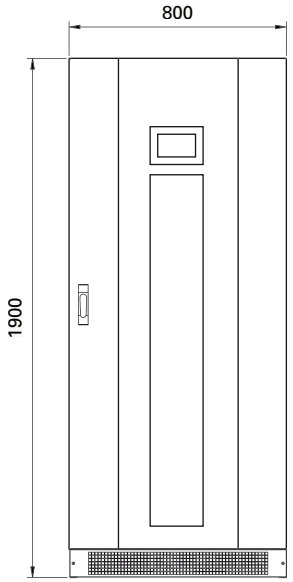
Spain: Real Decreto 1663/2000

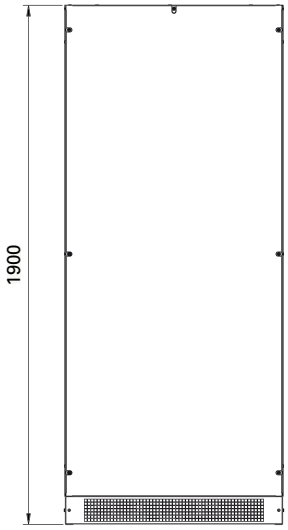
Italy: DK5940

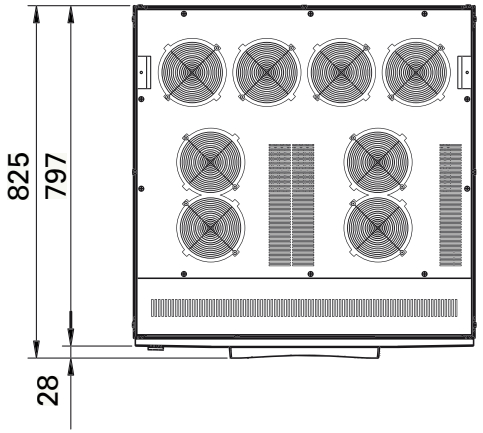


Helios Power 100

HP 100	
Input	
Recommended power of the photovoltaic field	max 125 kWp
Recommended power of the photovoltaic field	min 80 kWp
Maximum direct voltage in an open circuit	800 Vcc
Recommended Voltage V0@STC	540-640 Vcc
MPPT Interval	330 ÷ 700 Vcc
Maximum input current	320 A
Voltage during system startup	390 V
Number of inputs	1
Output	
Rated power	100 KW
Maximum power	110 KW
Operating voltage	400Vca 3F +/-15%
Rated frequency	50Hz
Frequency interval	+/- 1%
Rated current	144,5 A
Maximum current	176,6 A
Current Harmonic Distorsion	<3%
Power factor	>0,98
Type of transformer	BF
System	
Maximum efficiency	95%
European efficiency	>94,1%
Stand-by consumption	<40 W
Night consumption	<40 W
Insulation operating protection	YES
Heat dissipation	max 5300 kCal/h
Operating temperature	0°C ÷ 50°C
Storage temperature	-20 +70°C
Humidity	< 95%







FEATURES

Colour: RAL 7035

Dimensions (WxDxH) mm: 800x800x1900

Weight: 720 kg

Protection level: IP20

Acoustic noise: <68dBA

COMMUNICATION

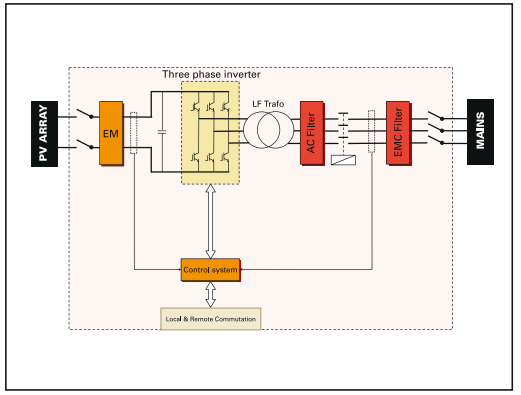
Display: 2 row LCD, 40 characters

Communication interface: RS232 supplied as standard, optional RS485 and Ethernet (slot version)

CERTIFICATIONS

Spain: Real Decreto 1663/2000

Italy: DK5940



COMMUNICATION ACCESSORIES AND SOFTWARE

RIELLO UPS offers the ideal solution to guarantee a protected, efficient and global system combining Helios Power inverters with software designed to ensure the complete control of your plant.

SUNVISION – MONITORING PROGRAM
Guarantees efficient and intuitive management of your photovoltaic plant, displaying the most important information such as voltage (AC/DC), current (AC/DC), power and temperature. The values of energy produced and the economic returns generated are always available via the contactors, which also calculate the reduction of CO_2 emissions. The “discovering/browsing” function enables all inverters connected to the RS485 bus to be immediately displayed in a directory and monitored later.

MAIN FEATURES
- graphic monitoring of inverter status
- detailed display with all values
- centralized control of PV plants connected via RS232 and RS485 ports and via network
- internal graphic data log compatible with Smart Energy Manager
- alarm notification via e-mail and SMS
- http functionality for remote control
- multilingual support

SUPPORTED OPERATING SYSTEMS
- Windows 98, Me, 2000, 2003, XP, Vista
- Linux
- Sun Solaris 8, 9 and 10
- MacOSX 10.x with Java 1.5



RS 485 – COMMUNICATION ADAPTER
The RS485 card enables the creation of a Bus to connect several inverters displaying all parameters by means of connection to a PC with SunVision software.

MAIN FEATURES
- Plug&Play installation
- Data transfer up to 9.6kBaud

SMART LOG
This remote data acquisition and display device is able to provide information on the photovoltaic generator’s main electrical parameters without the need of a PC. Compatible with installations of up to 20 inverters, it can receive data from temperature and radiation sensors and in the event of a malfunction it can send alarms to remote locations, even on GSM mobile phones or via e-mail. Thanks to its compatibility with the HTTP protocol it is also possible to monitor the status of the plant via a web browser without the need to install additional software.

- 10/100Mbps Ethernet compatible
- RS232 and RS485 communication ports compatible with HTTP, TCP/IP, UDP, SMTP, PPPoE, Dynamic DNS, DNS Client, SNTP, BOOTP, DHCP, FTP protocols
- analog inputs for temperature and radiation sensors
- event history log management

NETMAN PLUS_NETWORK AGENT

The NetMan Plus network card enables the management of the inverter connected directly to the 10/100Mbps LAN utilizing the main network communication protocols (TCP/IP and HTTP).

MAIN FEATURES

- compatible with 10/100Mbps Ethernet and IPv4/6 network
- compatible with SunVision
- HTTP for control via web browser
- SMTP for alarm e-mail dispatching
- serial port for communication with inverter
- event history log management

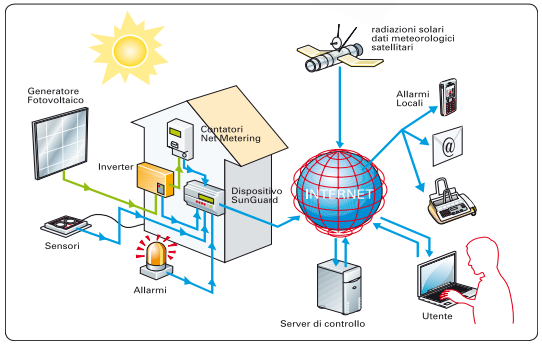
SOLAR MANAGEMENT

Users want to be sure that their photovoltaic plants function correctly so that their investment translates into profits, regardless of whether these are huge photovoltaic parks or single private installations. Any breakdowns or faults that may impact plant performance must be identified and eliminated immediately. Through solar management solutions, RIELLO UPS guarantees its clients the most complete and advanced monitoring system available today.

At the heart of the system is the SunGuard device enabling the centralization of information produced by:

- the photovoltaic generator
- the inverter
- the temperature and radiation sensors
- the StrinGuard sensors

SunGuard sends the memorized data by means of an internal analog, ISDN, GPRS or ADSL modem to the control server interfaced with a meteorological satellite system that analyzes the production data and highlights any problems at plant level. Sending data to the server can be programmed by the user in an automatic manner or can be remotely “forced” at any time of the day. In the event of faults the SunGuard picks up alarm signals connected to clean contacts and immediately sends alarm signals via fax, mail or SMS. The plant’s statistics can then be managed through the internet portal, with a variety of data and graphs on energy production, performance and economic returns.



The software can be downloaded free of charge from the website www.riello-ups.com/heliospower

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