



WINDY BOY



Inverter for Wind Energy Power Plants

SMA

The Future of Solar Technology

New technologies that make the worldwide use of renewable energies increasingly economical. A tremendous rate of innovation and a broad product range which is unique in its variety. SMA Solar Technology AG has been among the most successful companies in the field of solar technology for almost 30 years. A team of over 600 engineers and technicians develops state-of-the-art solar and wind power inverters. The Windy Boy for grid connection of small wind turbine systems has been an integral component of our product range for many years. In terms of quality, efficiency and reliability, it is as excellent as the Sunny Boy inverters – and benefits from our long experience in PV system technology.

The appropriate inverter for every application

Whether solar, wind, water power, combined heat and power plant or fuel cell: every energy system must be individually designed. Therefore SMA has a broad product range. We are the only manufacturer to offer you the appropriate inverters for every application, worldwide. For grid connection, stand-alone supply or backup operation. From kilowatts to megawatts.

SMA inverters as intelligent system managers

From the technological point of view, the inverter is the most important component in any wind turbine system: it converts the speed-dependant direct current generated of the wind generator into alternating current suitable for the grid. In addition it is, as an intelligent system manager, responsible for yield monitoring and grid management. Moreover, SMA inverters ensure an exceptionally high efficiency.

Worldwide customer proximity and international experience

As the market and technology leader in the field of solar inverters, we currently have more than 5,000 employees and are represented by 15 overseas subsidiaries on four continents. Our strategy: proximity to customers in all major markets. SMA customers don't just benefit from our internationally-oriented processes, but also from our many years of experience in dealing with country-specific certification and grid compliance regulations.

SMA in Figures

SMA Solar Technology AG is headquartered in Niestetal, near Kassel in Germany, and is represented by sales and service subsidiaries on four continents. This group of companies employs more than 5,000 employees (incl. temporary staff) and has been distinguished several times in previous years with awards for its outstanding performance as an employer. The company has been listed in the Prime Standard of the Frankfurt Stock Exchange (S92) since June 27, 2008 and the company's shares have been listed in the TecDAX since September 22, 2008. In 2009 SMA generated a turnover of more than € 934 million.



Windy Boy

Grid Connection of Small Wind Energy Systems – simpler than ever

Flexible

With the Windy Boy we have developed an inverter for grid connection of small wind turbine systems. Almost 30 years experience in system technology for decentral energies and over six gigawatts of installed inverter power worldwide forms the basis of this.

The Windy Boy converts the energy from the wind generator into grid conforming alternating current. And then it feeds this into a public utility grid or an autonomous stand-alone grid. Additionally the inverter is extraordinarily flexible: various device types cover the power range of 1,000 to 6,000 W. A combination of wind generators from various manufacturers and power classes is also easily possible.

High Yields

In order that your wind turbine system generates high yields, the inverter should be exactly alligned to the power charac-

teristic of the wind generator. As opposed to photovoltaic systems, load changes must be regularly and quickly taken into consideration here. Therefore the Windy Boy has a special operation method for wind generators. They make an individual power matching to the generator characteristic curves of various manufacturers. Additionally the device can be adapted for high and low wind locations.

Universal

In order that the Windy Boy can be installed globally, we have equipped it perfectly: with a transformer based concept, the independent Grid Guard disconnection device as well as special country accreditations. These properties ensure simple installation and a speedy approval process at the same time.

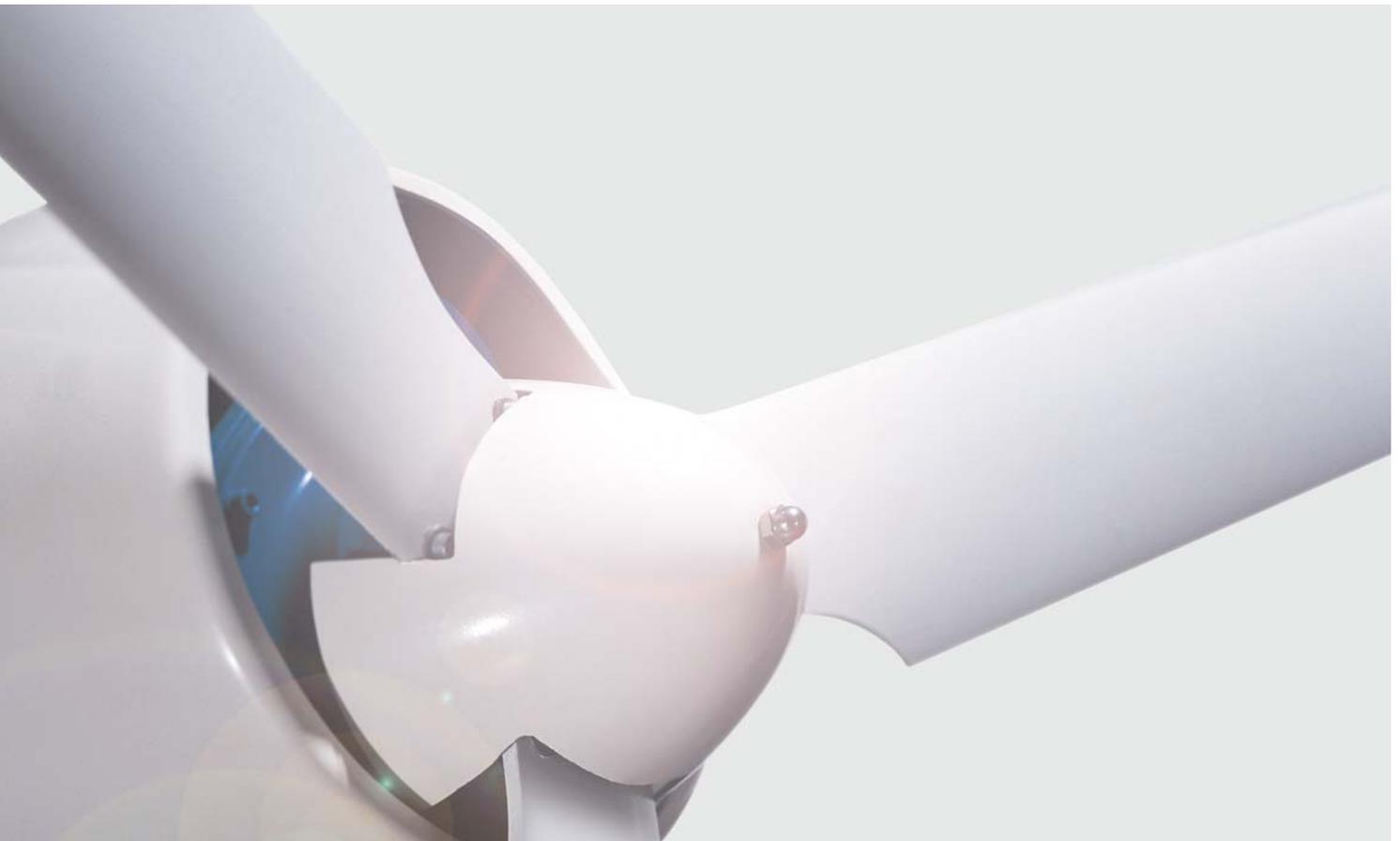
Durable

Wind power inverters must withstand extreme climatic conditions. Only thus can

they ensure the seamless operation of the entire system. The Windy Boy is impressive with its durable housing, its high housing protection class along with waterproof connectors. It is therefore suitable for indoor and outdoor mounting and can be installed directly on the mast.

Reliable

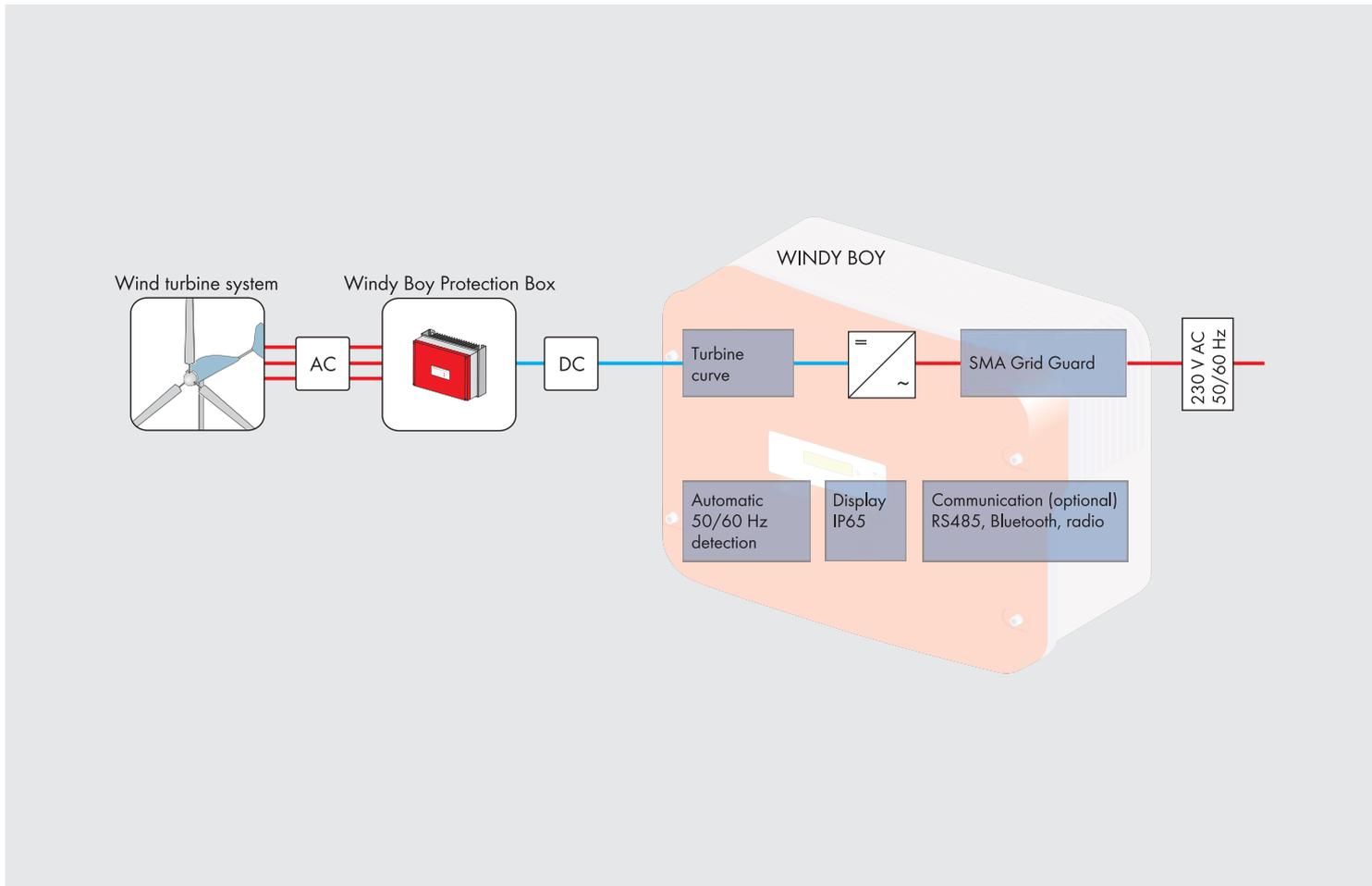
Whether standard display, optional interface or *Bluetooth*[®], the Windy Boy offers many options for reliable system monitoring. In combination with SMA communication products it provides comprehensive system diagnostics, data visualisation and storage as well as reliable remote maintenance of wind turbine systems. Exactly to your requirements.



Set to every wind

Windy Boy – the heart of your wind turbine system

The Windy Boy connects small wind turbine systems with permanent magnet generators to an AC grid. Its task: to convert the electricity from the wind generator into grid conforming alternating current and feed it into the AC grid. Since the electricity from the wind generator is dependent on the rotary speed and can greatly vary, the inverter should be protected from too great a feed-in voltage. For this, SMA has found the ideal solution: Teamwork.



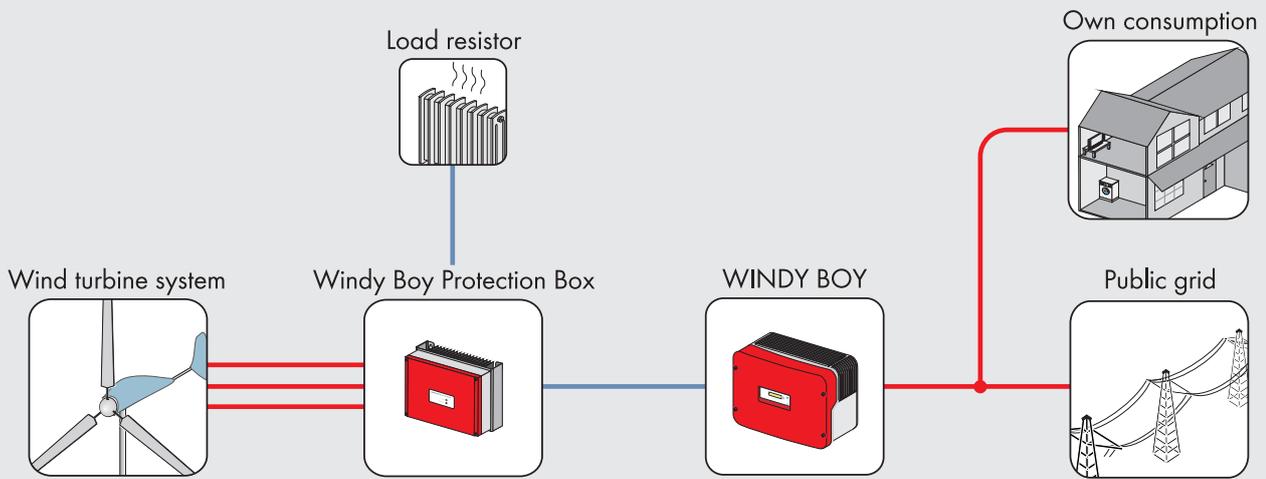
Strength in Team

The Windy Boy Protection Box and the Windy Boy work perfectly together: The Windy Boy Protection Box converts the rotary speed variable voltage of the generator into direct-current voltage and thus protects the inverter. An external heating resistor is sufficient to dissipate possible surges. The direct current from the Windy Boy Protection Box is then converted into grid conforming alternating current by the Windy Boy and fed into the AC grid. The AC grid can be either a public utility grid or a Sunny Island grid.

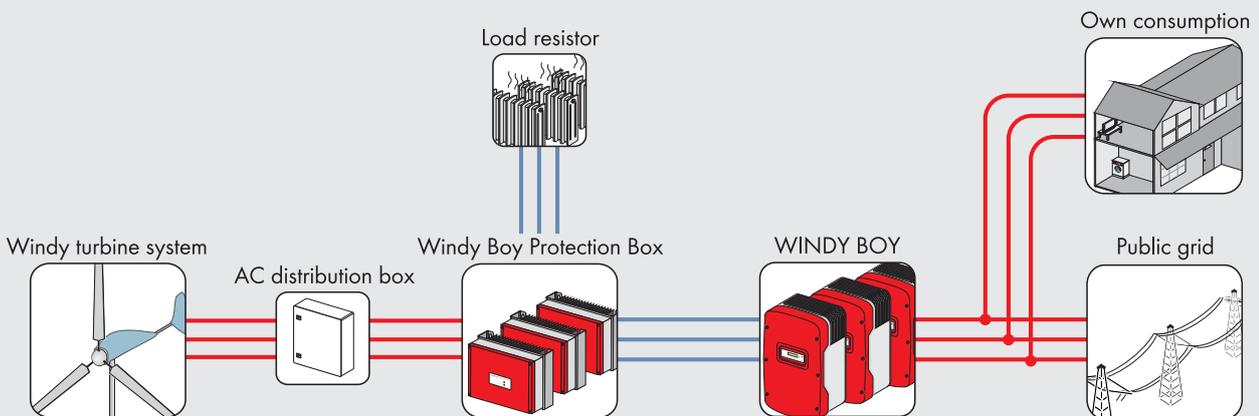
Highest output, which adjusts

The Windy Boy is adjustable when it comes to output. The turbine characteristic curve can be programmed via software parameters very simply. We recommend our free of charge downloadable Windy Boy Setup Tool for this. The settings of a polynomial characteristic curve makes the optimum and individual adjustment to your wind turbine system possible. Thus you achieve an optimum start up procedure, a high reaction speed and maximum energy yields. Additionally the soft start up parameters protect the mechanical components of your system. This is of great benefit to the life cycle of your power plant.

You would like to realize a larger system? No problem, since Windy Boys with the same input voltage can be connected in parallel. Thus you achieve system sizes way beyond 6 kW. A further advantage – multiphase systems are also able to be constructed simply.



Surplus feeding in 1-phase system



Surplus feeding in 3-phase system

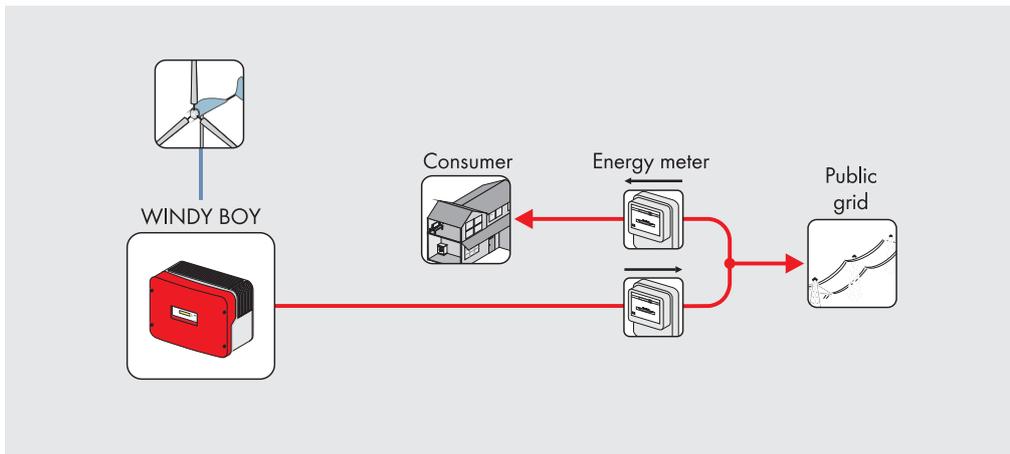
Public Utility Grid or Stand-Alone?

Grid Connection Options

The Windy Boy is flexible and offers you various options for energy use. It can feed the electricity from your wind turbine system into an house grid, a public utility grid or an autonomous Sunny Island grid.

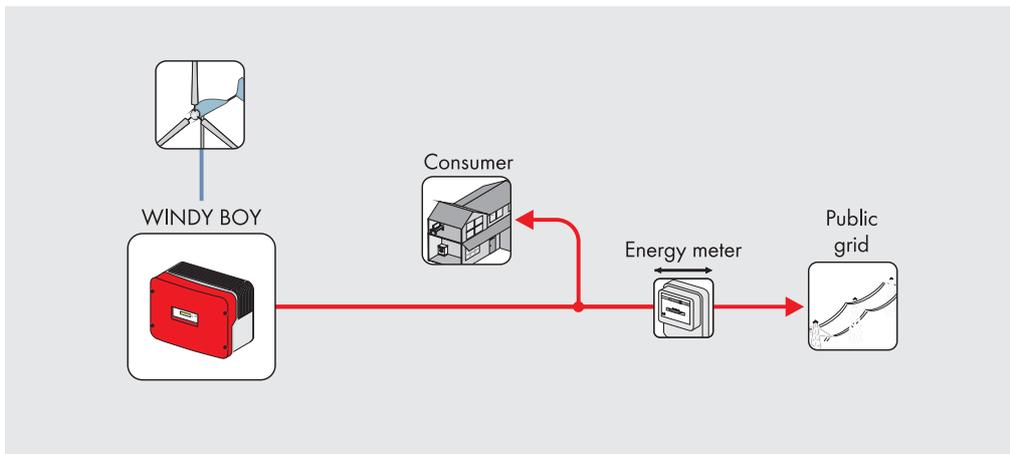
1. Feeding directly into the public utility grid

Here the Windy Boy feeds the energy from the wind turbine system directly into the public utility grid. This takes place via an feed-in counter. Depending on the location of your installation you receive a fixed feed-in reimbursement from the grid operator. In Germany the reimbursement is governed by the Renewable Energy Act (EEG).



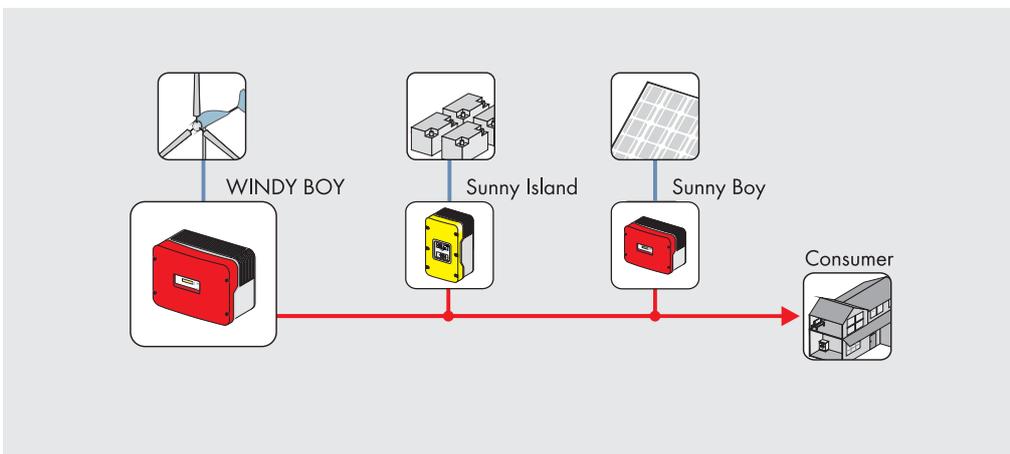
2. Feeding indirectly into the public utility grid.

If you decide upon indirect feeding in to the public utility grid, in the first instance you are consumer: the generated energy can be used immediately by you, e.g. for the supply of a weekend house. Intermediate storage of the energy into a battery is not applicable. The surplus energy is fed into the public utility grid via a counter. Thus you profit from your system and save on the investment of battery storage.



3. Feeding into a Sunny Island stand-alone grid

Feeding into a Sunny Island stand-alone grid makes you independent. Remote areas can thus be supplied with the electricity from wind turbine systems. How does this work? Quite simply: the Sunny Island battery inverter forms an AC grid and takes over the management of your stand-alone system. It connects all components, e.g. the Windy Boy and the battery storage. The energy generated by the wind system is stored in the batteries via the Sunny Island – and made available when necessary.





Efficient

- Up to 95.6 % efficiency
- OptiCool: continuous operation even at high temperatures
- Freely configurable polynomial curve

Simple

- Free choice of installation site
- Free choice of turbines thanks to programmable characteristic curve
- Certified for the most important countries of installation (SMA Grid Guard)

Safe

- Galvanic isolation
- Compatible with the Windy Boy Protection Box 500
- Protection of the turbine through smooth start

Reliable

- Worldwide SMA Service including Serviceline
- Comprehensive SMA warranty program

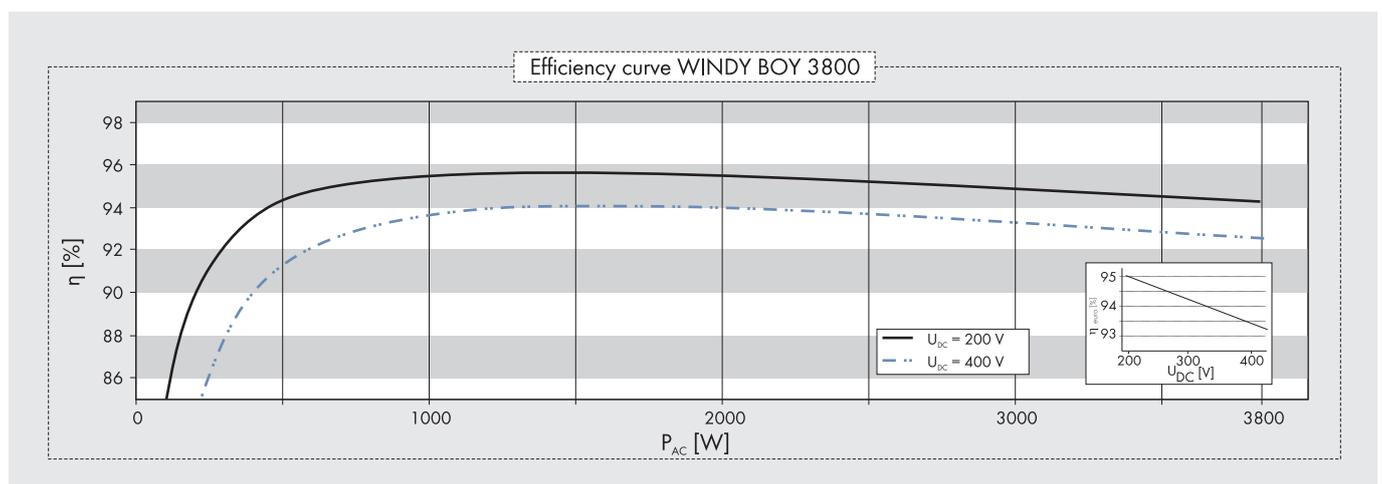
WINDY BOY 3300 / 3800

Highest yield in any climate

With a maximum efficiency of 95.6 %, the Windy Boy 3300 and 3800 rank among the most profitable inverters for small wind energy plants. The weather-proof casing and the wide temperature range enable installation at almost any location, and thanks to the OptiCool cooling system, the equipment works at outdoor temperatures of up to 45 °C with maximum output. The programmable polynomial curve enables an optimal adjustment to the characteristic curve of the turbine and thus increases the yield. And should a problem arise: the worldwide SMA Service and comprehensive warranty program provide maximum security.

Technical Data

	Windy Boy 3300	Windy Boy 3800
Input (DC)		
Max. DC power	3820 W	4040 W
Recommended generator power at 2500 full-load hours per year	3100 W	3600 W
Recommended generator power at 5000 full-load hours per year	2800 W	3300 W
Max. DC voltage	500 V	500 V
Min. open circuit voltage for activating "Turbine Mode"	200 V	200 V
Operating range "Turbine Mode"	200 V - 500 V	200 V - 500 V
Max. input current	20 A	20 A
Output (AC)		
Nominal AC power	3300 W	3800 W
Max. AC power	3600 W	3800 W
Max. output current	18 A	18 A
Nominal AC voltage / AC operating range	220 V - 240 V / 180 V - 260 V	220 V - 240 V / 180 V - 260 V
AC grid frequency (self-adjusting) / range	50 Hz / 60 Hz / ± 4.5 Hz	50 Hz / 60 Hz / ± 4.5 Hz
Phase shift (cos φ)	1	1
AC connection	Single-phase	Single-phase
Efficiency		
Max. efficiency	95.2 %	95.6 %
Euro-Eta	94.4 %	94.7 %
Protection device		
DC reverse polarity protection	●	●
AC short-circuit strength	●	●
Ground fault monitoring	●	●
Grid monitoring (SMA Grid Guard)	●	●
Galvanically isolated	●	●
General Data		
Dimensions (W / H / D) in mm	450 / 352 / 236	450 / 352 / 236
Weight	41 kg	41 kg
Operating temperature range	-25 °C ... +60 °C	-25 °C ... +60 °C
Internal consumption: operating / standby	< 7 W / 0.1 W	< 7 W / 0.1 W
Topology	Low-frequency transformer	Low-frequency transformer
Cooling concept	OptiCool	OptiCool
Installation site: indoor / outdoor (IP65)	●/●	●/●
Features		
DC connection: MC3 / MC4 / Tyco	●/○/○	●/○/○
AC connection: plug connector	●	●
LCD	●	●
Color of lid: red	●	●
Interfaces: RS485 / radio	○/○	○/○
Warranty: 5 years / 10 years	●/○	●/○
Certificates and approvals	www.SMA.de	www.SMA.de
<p>● Standard equipment ○ Optional</p> <p>Data at nominal conditions</p>		





Efficient

- Up to 96.1 % efficiency
- Can be combined to form three-phase units with up to 18 kW output
- Integrated SMA Power Balancer
- OptiCool: continuous operation even at high temperatures

Simple

- Free choice of installation site
- Free choice of turbines thanks to programmable characteristic curve
- Certified for the most important countries of installation (SMA Grid Guard)

Safe

- Galvanic isolation
- Compatible with the Windy Boy Protection Box 600

Reliable

- Worldwide SMA Service including Serviceline
- Comprehensive SMA warranty program

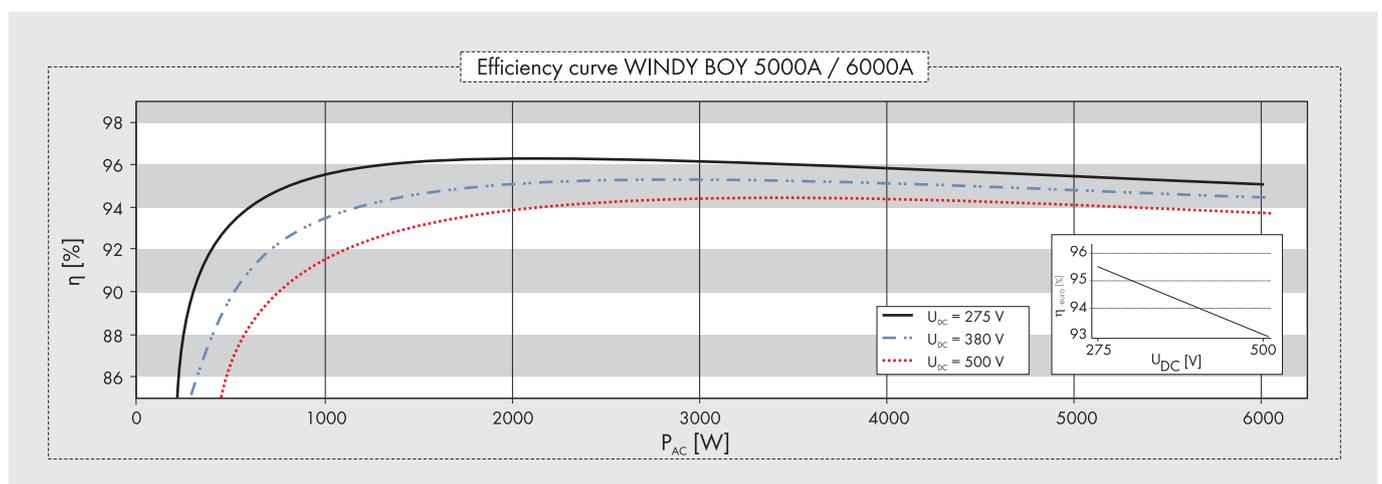
WINDY BOY 5000A / 6000A

The performance class up to 18 kW

The Windy Boy 5000A and 6000A not only feature a maximum efficiency of 96.1 % but are also suited for the development of three-phase grid-feeding wind energy plants. The integrated SMA Power Balancer prevents undue load unbalance, and, in addition, the plant is able to feed-in even if individual phases fail. The weather-proof casing and the wide temperature range allow for installation at almost any location, and thanks to the OptiCool cooling system, the equipment works at outdoor temperatures of up to 45 °C with maximum output. And in case of a problem: The worldwide SMA Service and the comprehensive warranty program provide maximum security.

Technical Data

	Windy Boy 5000A	Windy Boy 6000A
Input (DC)		
Max. DC power	5750 W	6300 W
Recommended generator power at 2500 full-load hours per year	4600 W	5500 W
Recommended generator power at 5000 full-load hours per year	4200 W	5100 W
Max. DC voltage	600 V	600 V
Operating range "Turbine Mode"	246 V - 600 V	246 V - 600 V
Min. open circuit voltage for activating "Turbine Mode"	250 V	250 V
Max. input current	26 A	26 A
Output (AC)		
Nominal AC power	5000 W	6000 W
Max. AC power	5500 W	6000 W
Max. output current	26 A	26 A
Nominal AC voltage / AC operating range	220 V - 240 V / 180 V - 260 V	220 V - 240 V / 180 V - 260 V
AC grid frequency (self-adjusting) / range	50 Hz / 60 Hz / ± 4.5 Hz	50 Hz / 60 Hz / ± 4.5 Hz
Phase shift (cos ϕ)	1	1
AC connection	Single-phase	Single-phase
Efficiency		
Max. efficiency	96.1 %	96.1 %
Euro-Eta	95.2 %	95.2 %
Protection device		
DC reverse polarity protection	●	●
AC short-circuit strength	●	●
Ground fault monitoring	●	●
Grid monitoring (SMA Grid Guard)	●	●
Galvanically isolated	●	●
General Data		
Dimensions (W / H / D) in mm	468 / 613 / 242	468 / 613 / 242
Weight	62 kg	63 kg
Operating temperature range	-25 °C ... +60 °C	-25 °C ... +60 °C
Internal consumption: operating / standby	< 7 W / 0.25 W	< 7 W / 0.25 W
Topology	Low-frequency transformer	Low-frequency transformer
Cooling concept	OptiCool	OptiCool
Installation site: indoor / outdoor (IP65)	●/●	●/●
Features		
DC connection: MC3 / MC4 / Tyco	○/●/○	○/●/○
AC connection: screw terminal	●	●
LCD	●	●
Interfaces: RS485 / radio	○/○	○/○
Warranty: 5 years / 10 years	●/○	●/○
Certificates and approvals	www.SMA.de	www.SMA.de
● Standard equipment ○ Optional		
Data at nominal conditions - Last updated: August 2008		





High Yields

- Maximum efficiency of 97 %
- Transformerless, with H5 topology
- Integrated SMA Power Balancer
- OptiCool: Continuous operation even at high temperatures

Flexible

- Broad input voltage range
- Cable connection without tools
- Programmable polynomial curve enables free selection of turbines

Easy to use

- Easily accessible connection-area
- Low specific weight

WINDY BOY 3600TL / 5000TL

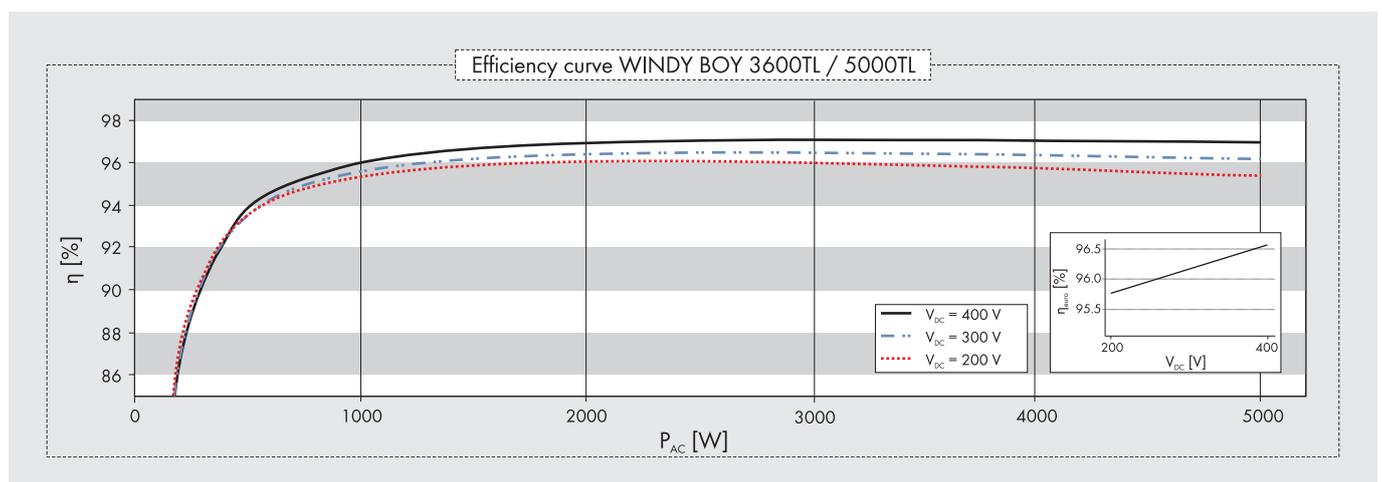
Technology meets simplicity

With even better communication, usability and efficiency, the Windy Boy 3600TL and 5000TL inverters set a new standard for inverter technology. With modern graphic displays, a simplified assembly concept, and cable-free plant communication using the Bluetooth global standard: the new generation of devices are ideally suited to almost every need. The transformerfree Windy Boy 3600TL and 5000TL feature a peak efficiency of 97 percent for optimal yields from small wind energy plants. The polynomial curve and broad input voltage range provide maximum plant design flexibility. The new generation Windy Boy: an inverter for all turbine types.

Technical Data

	Windy Boy 3600TL	Windy Boy 5000TL
Input (DC)		
Max. DC power	3800 W	5300 W
Max. DC voltage	550 V	550 V
DC nominal voltage	400 V	400 V
Min. open circuit voltage for activating "Turbine Mode"	125 V	125 V
Operating range "Turbine Mode"	80 V - 550 V	80 V - 550 V
Max. input current	30 A	30 A
Output (AC)		
AC nominal power	3600 W	4600 W
Max. AC power	3600 W	5000 W
Max. output current	20 A	22 A
Nominal AC voltage / AC operating range	220 V - 240 V / 180 V - 280 V	220 V - 240 V / 180 V - 280 V
AC grid frequency / range	50 Hz, 60 Hz / ± 5 Hz	50 Hz, 60 Hz / ± 5 Hz
Power factor (cos ϕ)	1	1
Phase conductors / connection phases	1 / 1	1 / 1
Efficiency		
Max. efficiency	> 97.0 %	97.0 %
Euro-Eta	96.4 %	96.5 %
Protection devices		
DC reverse-polarity protection	●	●
AC short-circuit protection	●	●
Ground fault monitoring	●	●
Grid monitoring (SMA Grid Guard)	●	●
Protection class / overvoltage category	I / III	I / III
General Data		
Dimensions (W / H / D) in mm	470 / 445 / 180	470 / 445 / 180
Weight	25 kg	25 kg
Operation temperature range	-25 °C ... +60 °C	-25 °C ... +60 °C
Noise emission (typical)	≤ 29 dB(A)	≤ 29 dB(A)
Internal consumption: operation / standby	< 10 W / < 0.5 W	< 10 W / < 0.5 W
Topology	Transformerless	Transformerless
Cooling concept	OptiCool	OptiCool
Electronics protection rating / connection area (per IEC 60529)	IP65 / IP54	IP65 / IP54
Climatic category (per IEC 60721)	4K4H	4K4H
Features		
DC connection: SUNCLIX	●	●
AC-connection: terminals	●	●
Display: text line / graphic	- / ●	- / ●
Interfaces: RS485 / Bluetooth	○ / ●	○ / ●
Warranty: 5 years / 10 years	● / ○	● / ○
Certificates and permits	CE, VDE0126-1-1, G83/1, RD 1663/200, EN 50438	

● Standard features ○ Optional features - Not available / Data at nominal conditions





Efficient

- Control optimized for wind energy plants
- Up to 95 % efficiency
- Protection of the turbine through smooth start
- Freely configurable polynomial curve

Simple

- Free choice of installation site
- Certified for the most important countries of Installation (SMA Grid Guard)

Safe

- Galvanic isolation
- Compatible with the Windy Boy Protection Box 600
- Proven technology, 10,000 times tried and tested

Reliable

- Worldwide SMA Service including Serviceline
- Comprehensive SMA warranty program

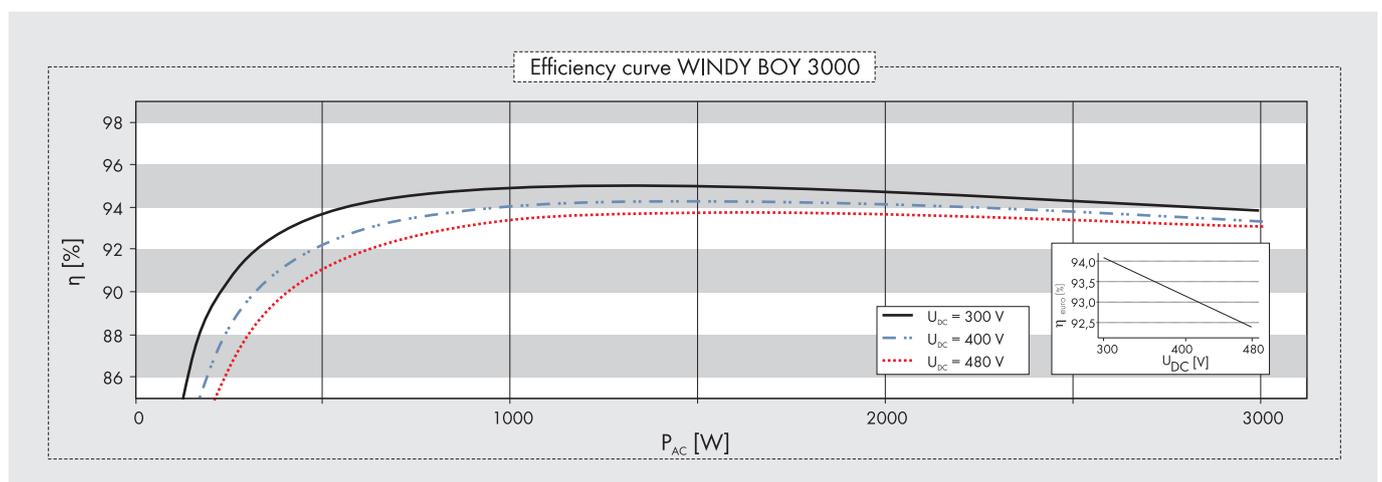
WINDY BOY 2500 / 3000

Worldwide proven technology

The Windy Boy 2500 and 3000 are ideal for small wind energy plants: with more than 10,000 units, they are successfully in use worldwide. They feature a maximum efficiency of 95 %. The programmable polynomial curve enables an optimal adjustment to the characteristic curve of the turbine, which is also protected by a special smooth start device. The worldwide serviceable SMA Grid Guard interface is also used with this Windy Boy. It ensures maximum reliability for the operation of the wind energy plant and allows for the feeding-in to almost any public grid.

Technical Data

	Windy Boy 2500	Windy Boy 3000
Input (DC)		
Max. DC power	2700 W	3200 W
Recommended generator power at 2500 full hours per year	2100 W	2500 W
Recommended generator power at 5000 full hours per year	1900 W	2200 W
Max. DC voltage	600 V	600 V
Min. open circuit voltage for activating "Turbine Mode"	250 V	290 V
Operating range "Turbine Mode"	224 V - 600 V	268 V - 600 V
Max. input current	12 A	12 A
Output (AC)		
Nominal AC power	2300 W	2750 W
Max. AC power	2500 W	3000 W
Max. output current	12.5 A	15 A
Nominal AC voltage / AC operating range	220 V - 240 V / 180 V - 260 V	220 V - 240 V / 180 V - 260 V
AC grid frequency (self-adjusting) / range	50 Hz / 60 Hz / ± 4.5 Hz	50 Hz / 60 Hz / ± 4.5 Hz
Phase shift (cos φ)	1	1
AC connection	Single-phase	Single-phase
Efficiency		
Max. efficiency	94.1 %	95.0 %
Euro-Eta	93.2 %	93.6 %
Protection device		
DC reverse polarity protection	●	●
AC short-circuit strength	●	●
Ground fault monitoring	●	●
Grid monitoring (SMA Grid Guard)	●	●
Galvanically isolated	●	●
General Data		
Dimensions (W / H / D) in mm	434 / 295 / 214	434 / 295 / 214
Weight	30 kg	32 kg
Operating temperature range	-25 °C ... +60 °C	-25 °C ... +60 °C
Internal consumption: operating / standby	< 7 W / 0.25 W	< 7 W / 0.25 W
Topology	Low-frequency transformer	Low-frequency transformer
Cooling concept	convection	convection
Installation site: indoor / outdoor (IP65)	●/●	●/●
Features		
DC connection: MC3 / MC4 / Tyco	●/○/○	●/○/○
AC connection: plug connector	●	●
LCD	●	●
Color of lid: red	●	●
Interfaces: RS485 / radio	○/○	○/○
Warranty: 5 years / 10 years	●/○	●/○
Certificates and approvals	www.SMA.de	www.SMA.de
<p>● Standard equipment ○ Optional</p> <p>Data at nominal conditions</p>		





Efficient

- Specially designed for small wind energy plants
- Freely configurable characteristic curve

Simple

- Free choice of installation site
- Certified for the most important countries of installation (SMA Grid Guard)

Safe

- Galvanic isolation
- Compatible with the Windy Boy Protection Box 400

Flexible

- Wide input power range*

WINDY BOY 1200 / 1700

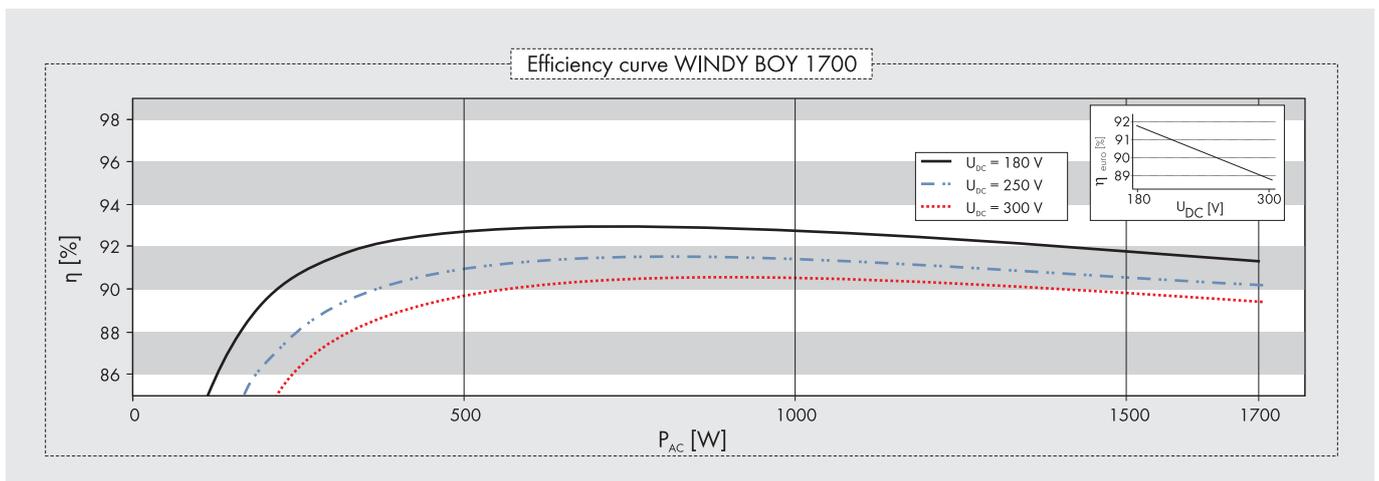
The powerful compact devices

The Windy Boy 1200 and 1700 are ideally suited for small wind energy plants. The programmable characteristic curve enables an optimal adjustment to the characteristic curve of the turbine and thus increases the yield. The weather-proof casing and the wide temperature range allow for installation at almost any location. The equipment is optimized for fast and frequent load changes, and with the Windy Boy Protection Box, they are the perfect interface for any turbine. All data can be monitored at any time on the integrated display or any of several communication interfaces. And in case of a problem: The worldwide SMA Service and the comprehensive warranty program provide maximum security.

* for Windy Boy 1200

Technical Data

	Windy Boy 1200	Windy Boy 1700
Input (DC)		
Max. DC power	1320 W	1850 W
Recommended generator power at 2500 full-load hours per year	1050 W	1400 W
Recommended generator power at 5000 full-load hours per year	1000 W	1300 W
Max. DC voltage	400 V	400 V
Min. open circuit voltage for activating "Turbine Mode"	120 V	150 V
Operating range "Turbine Mode"	100 V - 400 V	139 V - 400 V
Max. input current	12,6 A	12.6 A
Output (AC)		
Nominal AC power	1200 W	1550 W
Max. AC power	1200 W	1700 W
Max. output current	6.1 A	8.6 A
Nominal AC voltage / AC operating range	220 V - 240 V / 180 V - 260 V	220 V - 240 V / 180 V - 260 V
AC grid frequency (self-adjusting) / range	50 Hz / 60 Hz / ± 4.5 Hz	50 Hz / 60 Hz / ± 4.5 Hz
Phase shift (cos φ)	1	1
AC connection	Single-phase	Single-phase
Efficiency		
Max. efficiency	92.1 %	93.5 %
Euro-Eta	90.9 %	91.8 %
Protection device		
DC reverse polarity protection	●	●
AC short-circuit strength	●	●
Ground fault monitoring	●	●
Grid monitoring (SMA Grid Guard)	●	●
Galvanically isolated	●	●
General Data		
Dimensions (W / H / D) in mm	434 / 295 / 214	434 / 295 / 214
Weight	22 kg	25 kg
Operating temperature range	-25 °C ... +60 °C	-25 °C ... +60 °C
Internal consumption: operating / standby	< 4 W / 0.1 W	< 5 W / 0.1 W
Topology	Low-frequency transformer	Low-frequency transformer
Cooling concept	convection	convection
Installation site: indoor / outdoor (IP65)	●/●	●/●
Features		
DC connection: MC3 / MC4 / Tyco	●/○/○	●/○/○
AC connection: plug connector	●	●
LCD	●	●
Color of lid: red	●	●
Interfaces: RS485 / radio	○/○	○/○
Warranty: 5 years / 10 years	●/○	●/○
Certificates and approvals	www.SMA.de	www.SMA.de
<p>● Standard equipment ○ Optional</p> <p>Data at nominal conditions</p>		





Efficiency

- Specially designed for small wind energy plants
- Outstanding performance at low wind speeds

Easy to use

- Programmable polynomial curve enables free selection of turbines
- Free choice of installation site

Reliability

- Galvanic isolation
- In accordance with almost all European power supply line guidelines

Reliable

- Worldwide SMA Service including Serviceline
- Comprehensive SMA warranty program

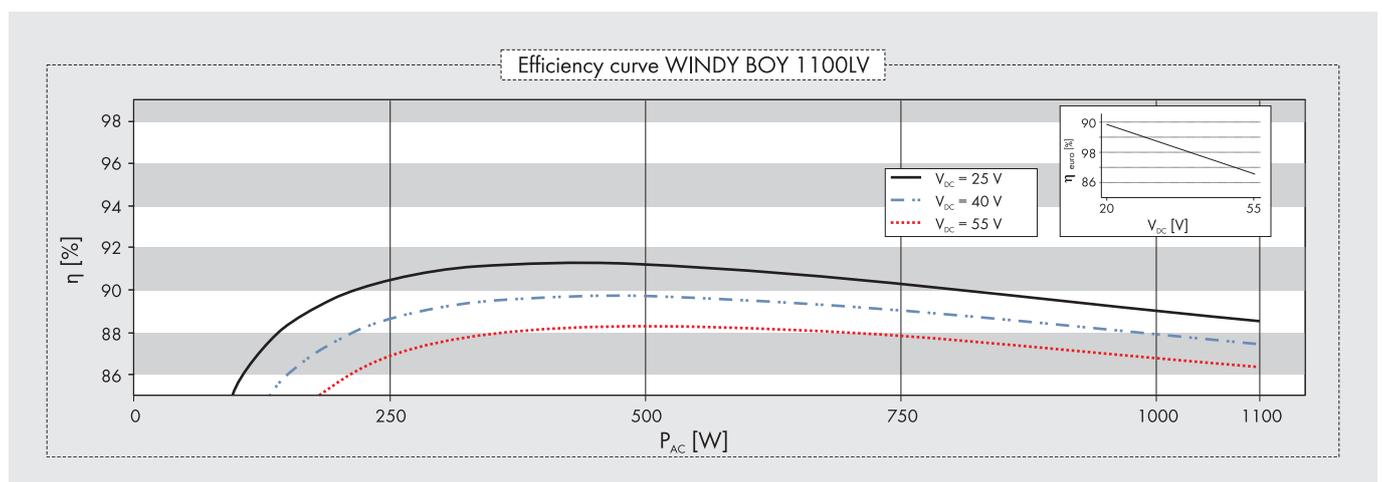
WINDY BOY 1100LV

The solution for low generator voltage

The Windy Boy 1100LV is the perfect solution for the smallest wind energy systems with low generator voltage: turbines with a nominal voltage of 24 or 48 V can be connected without an additional voltage converter. The programmable polynomial curve gives you full flexibility for choosing the turbine, while its weatherproof enclosure and the wide temperature range allow for installation at nearly any location. As an inverter for wind energy systems, the Windy Boy is optimally adjusted to fast and frequent load changes. Its minimum internal consumption during a calm also increases the yield, which you can monitor at any time using the display and different communication interfaces.

Technical Data

	Windy Boy 1100LV	
Input (DC)		
Max. DC power	1210 W	
Recommended generator power at 2500 full-load hours per year	1000 W	
Recommended generator power at 5000 full-load hours per year	900 W	
Max. DC voltage	60 V	
Min. open circuit voltage for activating "Turbine Mode"	25 V	
Operating range "Turbine Mode"	21 V - 60 V	
Max. input current	62 A	
Output (AC)		
Nominal AC power	1000 W	
Max. AC power	1100 W	
Max. output current	5 A	
Nominal AC voltage / AC operating range	220 V, 230 V, 240 V / 180 V - 260 V	
AC grid frequency / range	50 Hz, 60 Hz / ± 4.5 Hz	
Power factor (cos φ)	1	
Phase conductors / connection phases	1 / 1	
Efficiency		
Max. efficiency	92.0 %	
Euro-Eta	90.4 %	
Protective devices		
DC reverse polarity protection	●	
AC short-circuit strength	●	
Ground fault monitoring	●	
Grid monitoring (SMA Grid Guard)	●	
Galvanically isolated	●	
General Data		
Dimensions (W / H / D) in mm	434 / 295 / 214	
Weight	29 kg	
Operating temperature range	-25 °C ... +60 °C	
Internal consumption: Operation / standby	< 5 W / 0.1 W	
Topology	LF transformer	
Cooling concept	Convection	
Electronics protection rating / connection area (per IEC 60529)	IP65 / IP65	
Climatic category (per IEC 60721)	4K4H	
Features		
DC connection: screw terminal	●	
AC connection: plug connector	●	
Display: text line / graphic	●/-	
Interfaces: RS485 / Bluetooth	○/○	
Warranty: 5 years / 10 years	●/○	
Certificates and permits	CE, VDE0126-1-1, G83/1, CER/06/190, DK 5940, RD 1663, AS4777, EN 50438	
<p>● Standard features ○ Optional features - Not available / Data at nominal conditions</p>		





Reliability

- Highly dynamic overvoltage protection
- Optimal start-up performance of the wind turbine

High Yields

- High efficiency of the integrated inverter
- Feeding-in even at excessive generator voltage

Easy to use

- Easy installation
- 3-phase generator connection
- Available in three voltage classes: 400 V, 500 V, and 600 V

WINDY BOY PROTECTION BOX

Optimal protection for small wind power plants

A rectifier and overvoltage protection in one – SMA's Windy Boy Protection Box can do it all: it protects the inverter from excess generator voltage by feeding excess generator voltage to a load resistor, which slows down the turbine. In addition, the Windy Boy Protection Box features a three-phase rectifier. It is delivered as turnkey unit and can be used with nearly all types of generators made by different manufacturers in various performance classes. The box is thus suited for use with wind plants as well as for other permanent magnet generators such as small water power plants and CHP systems.

Windy Boy

The optimal inverter for small wind turbine systems

Legend:

- = Series
- = Optional



WINDY BOY 1100LV WINDY BOY 1200 WINDY BOY 1700 WINDY BOY 2500

Input data	Max. DC-input voltage	60 V	400 V	400 V	600 V
	Operating range "Turbine Mode"	21 - 60 V	100 - 400 V	139 - 400 V	224 - 600 V
	Min. open circuit input voltage for activating "Turbine Mode"	25 V	120 V	150 V	250 V
	Turbine control	Polynomial curve	Polynomial curve	Polynomial curve	Polynomial curve
	Nominal DC-operating voltage	25 V	180 V	180 V	300 V
	Recommended generator power at 2500 full-load hours per year	1000 W	1050 W	1395 W	2070 W
	Recommended generator power at 5000 full-load hours per year	900 W	1000 W	1240 W	1840 W
	Max. input current (I_{max})	62 A	12.6 A	12.6 A	12.0 A
	Operating consumption	< 5 W	< 4 W	< 5 W	< 7 W
	DC-voltage ripple (U_{pp})	< 10 %	< 10 %	< 10 %	< 10 %
	DC Disconnect	Screw terminal	DC-plug connector	DC-plug connector	DC-plug connector
	Ground fault monitoring	●	●	●	●
	Reverse Polarity Protection	●	●	●	●
	Power supply line	AC connector	AC connector	AC connector	AC connector
Output data	Max. AC power	1100 W	1200 W	1700 W	2500 W
	Nominal AC power	1000 W	1200 W	1550 W	2300 W
	Internal consumption in standby	0.1 W	0.1 W	0.1 W	0.25 W
	Automatic 50/60 Hz detection	●	●	●	●
Efficiency	Max. efficiency / Euro-Eta	92.0 % / 90.4 %	92.1 % / 90.9 %	93.5 % / 91.8 %	94.1 % / 93.2 %
Grid monitoring	SMA Grid Guard DIN VDE 0126-1-1	●	●	●	●
Ambient Conditions	Permissible ambient temperatures	-25 °C ... +60 °C	-25 °C ... +60 °C	-25 °C ... +60 °C	-25 °C ... +60 °C
	Rel. humidity (permissible)	0 - 100 %, Cl.4K4H	0 - 100 %, Cl.4K4H	0 - 100 %, Cl.4K4H	0 - 100 %, Cl.4K4H
Other	Mounting location	Indoor/outdoor	Indoor/outdoor (IP65)	Indoor/outdoor (IP65)	Indoor/outdoor (IP65)
	Cooling type	Convection	Convection	Convection	Convection
	Dimensions (W / H / D) mm	434 / 295 / 214	434 / 295 / 214	434 / 295 / 214	434 / 295 / 214
	Weight	29 kg	22 kg	25 kg	30 kg
Special features	Display	●	●	●	●
	Suitable for Sunny Island Systems	●	●	●	●
Accessories	RS485, Radio, Bluetooth	○	○	○	○
	Sunny Beam, Sunny WebBox, Sunny Portal	○	○	○	○



WINDYBOY 3000 WINDYBOY 3300 WINDYBOY 3600TL WINDYBOY 3800 WINDYBOY 5000A WINDYBOY 5000TL WINDYBOY 6000A

600 V	500 V	550 V	500 V	600 V	550 V	600 V
268 - 600 V	200 - 500 V	80 - 550 V	200 - 500 V	246 - 600 V	80 - 550 V	246 - 600 V
290 V	200 V	125 V	200 V	250 V	125 V	250 V
Polynomial curve						
350 V	200 V	400 V	200 V	270 V	400 V	270 V
2475 W	2970 W	3600 W	3420 W	4500 W	4500 W	5400 W
2200 W	2640 W	3600 W	3040 W	4000 W	4000 W	4800 W
12.0 A	20 A	30 A	20 A	26 A	30 A	26 A
< 7 W	< 7 W	< 10 W	< 7 W	< 7 W	< 10 W	< 7 W
< 10 %	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %
DC-plug connector						
●	●	●	●	●	●	●
●	●	●	●	●	●	●
AC connector	AC connector	Terminals	AC connector	Screw terminal	Terminals	Screw terminal
3000 W	3600 W	3600 W	3800 W	5500 W	5000 W	6000 W
2750 W	3300 W	3600 W	3800 W	5000 W	4600 W	6000 W
0.25 W	0.1 W	0.5 W	0.1 W	0.25 W	0.5 W	0.25 W
●	●	●	●	●	●	●
95.0 % / 93.6 %	95.2 % / 94.4 %	97 % / 96.4 %	95.6 % / 94.7 %	96.1 % / 95.2 %	97 % / 96.5 %	96.1 % / 95.2 %
●	●	●	●	●	●	●
-25 °C ... +60 °C						
0 - 100 %, Cl.4K4H						
Indoor/outdoor (IP65)						
Convection	Active with OptiCool					
434 / 295 / 214	450 / 352 / 236	470 / 445 / 180	450 / 352 / 236	468 / 613 / 242	470 / 445 / 180	468 / 613 / 242
32 kg	41 kg	25 kg	41 kg	62 kg	25 kg	63 kg
●	●	●	●	●	●	●
●	●	●	●	●	●	●
○	○	○/○/●	○	○	○/○/●	○
○	○	○	○	○	○	○



All in one

SMA components for your wind turbine system

Wind turbine systems that are equipped with a Windy Boy offer you many possibilities. Alongside connection to a public utility grid they can also be integrated into autonomous energy systems. Here they work seamlessly with other energy generators. As for example with photovoltaic systems, which deliver first class yields with out Sunny Boy and Sunny Mini Central devices. Additionally the Windy Boy is compatible with all SMA communications products. This makes complete system control, appealing data visualization as well as remote diagnostics possible. We find that practical accessories are also indispensable. Therefore we guarantee you the highest quality and accuracy of fit.





Flexible

- For systems from 1 to 100 kW
- 1- and 3-phase operation, connectable in parallel and modularly extendable
- AC and DC coupling

Easy to use

- Easy commissioning
- Complete off-grid management

Efficient

- High efficiency
- Intelligent battery management for maximum battery life-span
- Reasonably priced integration of standard AC power consumers, renewable sources, and generators

Durable

- Excellent overload characteristics
- Suitable for extreme climate conditions
- 5-year SMA warranty

SUNNY ISLAND

Stand-alone grids easier than ever

The battery inverter Sunny Island makes off-grid power supply easier than ever: the Sunny Island establishes an AC-power grid where all power producers as well as the power consumers are easily integrated. The coupling on the AC-side and the innovative system management of the Sunny Island offer maximum flexibility for the system design, easy installation and perfect efficiency. Our devices are suitable for systems from 1 kW up to 100 kW all over the globe.

SMA Stand-Alone Inverters

System Manager for all types of energy generators

With AC-coupling and the Sunny Island as a system manager, SMA delivers an innovative solution for supplying electricity to remote locations. In addition Sunny Island systems are suitable for emergency supply for areas with unstable grids. What should you expect? Reliable inverters and grid quality electricity.

Functional Principle

The Sunny Island is a battery inverter and is in charge of setting up a stable stand-alone grid. In so doing, it constantly holds the voltage and frequency of the AC grid within the allowable limits. Both users and generators are connected directly to this grid. If there is an energy surplus, the Sunny Island charges the batteries; if there is a shortage, it supplies the grid with electricity from the batteries. Thanks to its highly developed battery management system, it can recognize the charge levels at any moment and in its function as system manager, it makes further decisions as well: if batteries are discharged or if there is a great demand for electricity, the Sunny Island can start a diesel generator or it can disconnect loads as needed. If the batteries are fully charged and there is little demand, it can reduce electricity production of the wind turbine system. It also determines the optimal strategy for charging the batteries, and in so doing, increases their lifespan.

Flexible grid layout

In addition to solar and wind power plants, diesel generators and other electricity generators, as well as all 230-volt loads, can be connected to the AC stand-alone grid. This does away with costly DC cabling and provides great flexibility. For smaller systems, SMA offers the Sunny Island Charger, an MPP charge regulator for a highly efficient DC-connection of the PV plant and batteries. This makes SMA the only company in the world to offer coordinated solutions for both AC and DC connections. The special advantage: SMA stand-alone grids can be set up quickly and can be adapted to increasing demand without much expense.

Expandable up to 100 kW

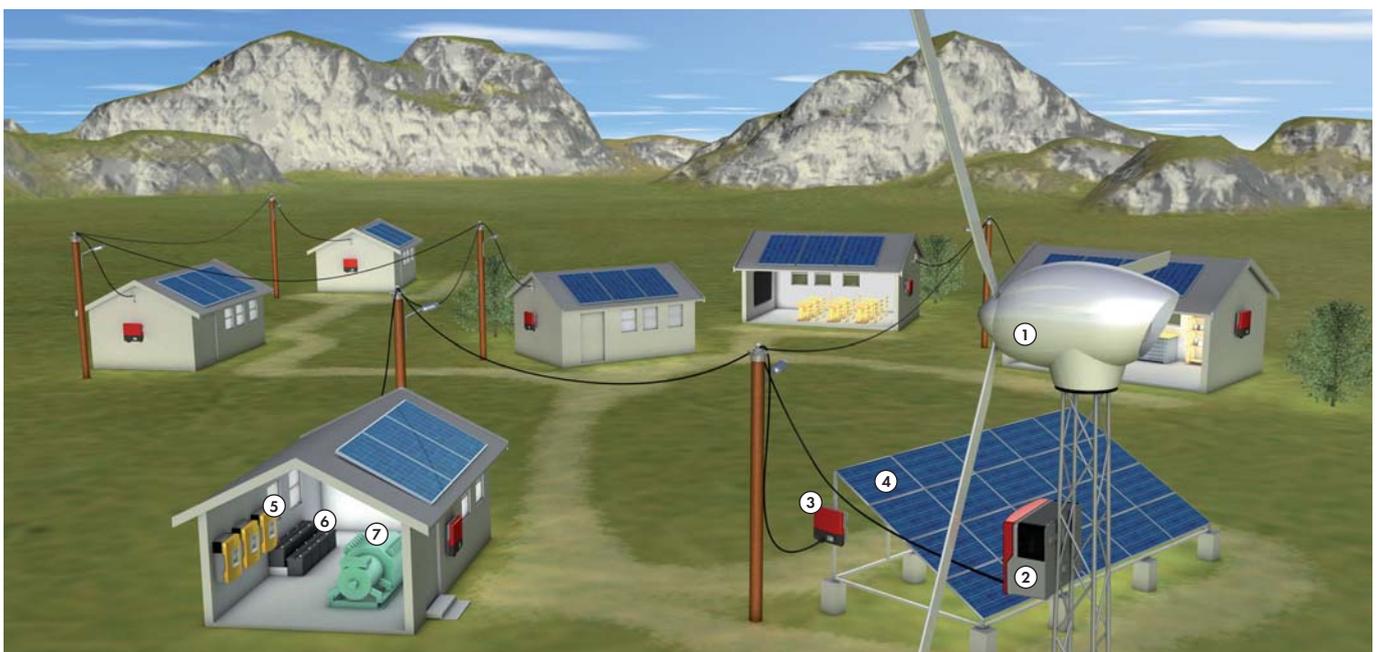
Stand-alone grids using the Sunny Island 2012, 2224 or 5048 can be expanded without difficulty through the parallel connection of several devices – single-phase

as well as three-phase. For systems with more than 15 kW, three Sunny Islands and a battery are combined in a cluster. To reach the total power desired, several of these clusters can be connected in parallel. The advantage: even if a battery fails, only one portion of the system is affected, i.e., the stand-alone grid supply is exceptionally secure.

Interested?

You can find more information on the topic of stand-alone systems on the Sunny Island Product Pages at www.SMA.de.

You can also request our comprehensive detailed brochures: Sales@SMA.de



Components: 1. Wind turbine, 2. WINDY BOY, 3. SUNNY BOY, 4. Solar generator, 5. SUNNY ISLAND, 6. Batteries, 7. Diesel generator



Innovative

- Wireless communication with up to 12 inverters via *Bluetooth*
- Power supply via integrated solar cell

Simple

- Fast installation
- Intuitive operation by means of a rotary push button

User-friendly

- Mobile desktop device with large LCD display
- Archiving capacity for a minimum of 100 days data in device memory
- USB port for data transfer to PC and battery charge

Reliable

- Event log for up to 25 messages
- Audio alarm in case of error

SUNNY BEAM with Bluetooth® Wireless Technology

The mobile energy yield indicator for your home

Informative, compact and easy to operate: the Sunny Beam with *Bluetooth* not only looks good, but it is also full of innovative monitoring technology. The large graphic display shows you all the essential data at a glance: daily profile, current output, daily and overall energy yield. But there's more to the Sunny Beam than meets the eye: At the flick of a switch you can retrieve the performance data of up to 12 inverters, a monthly synopsis, the energy yield in euros or the saved quantity of CO₂. The data from a minimum of 100 days' performance is stored within the device and can be uploaded to a PC via USB interface - no additional software is required. And in case of plant disruption, the Sunny Beam comes equipped with an optional audio signal.



Reliable

- Continuous control of the solar power system
- Radio-based system monitoring via *Bluetooth* wireless technology

- Early detection of operation failures

User-friendly

- System configuration and diagnostics using any PC (Windows, Linux or Mac OS)
- Automatic data transfer at predefinable time intervals

- Data processing free of charge via Sunny Portal
- Fieldbus communication via RS485 or *Bluetooth*

SUNNY WEBBOX

Professional data management for large-scale wind power systems

Plant monitoring, remote diagnostics, data storage and visualization: the Sunny WebBox is the high-performance communication hub for medium to large-scale wind power plants. It continuously gathers all the data from the inverters on the system side, thereby keeping you informed of the system's status at any given time. The Sunny WebBox is a multi-functional, energy-efficient data logger which offers a wealth of options for displaying, archiving and processing data, even in networks with strict security regulations. Moreover, the model fitted with an integrated *Bluetooth* interface dispenses entirely with the process of laying cables to connect to the inverters. Even from remote locations where no DSL or telephone connection is available, measurement data can be transmitted to Sunny Portal via the optional GSM modem.



Reliable

- Rapid fault detection by monitoring generator performance

Informative

- Precise measurement of irradiation and module temperature (plus optional measurement of ambient temperature and wind speed)

Easy to use

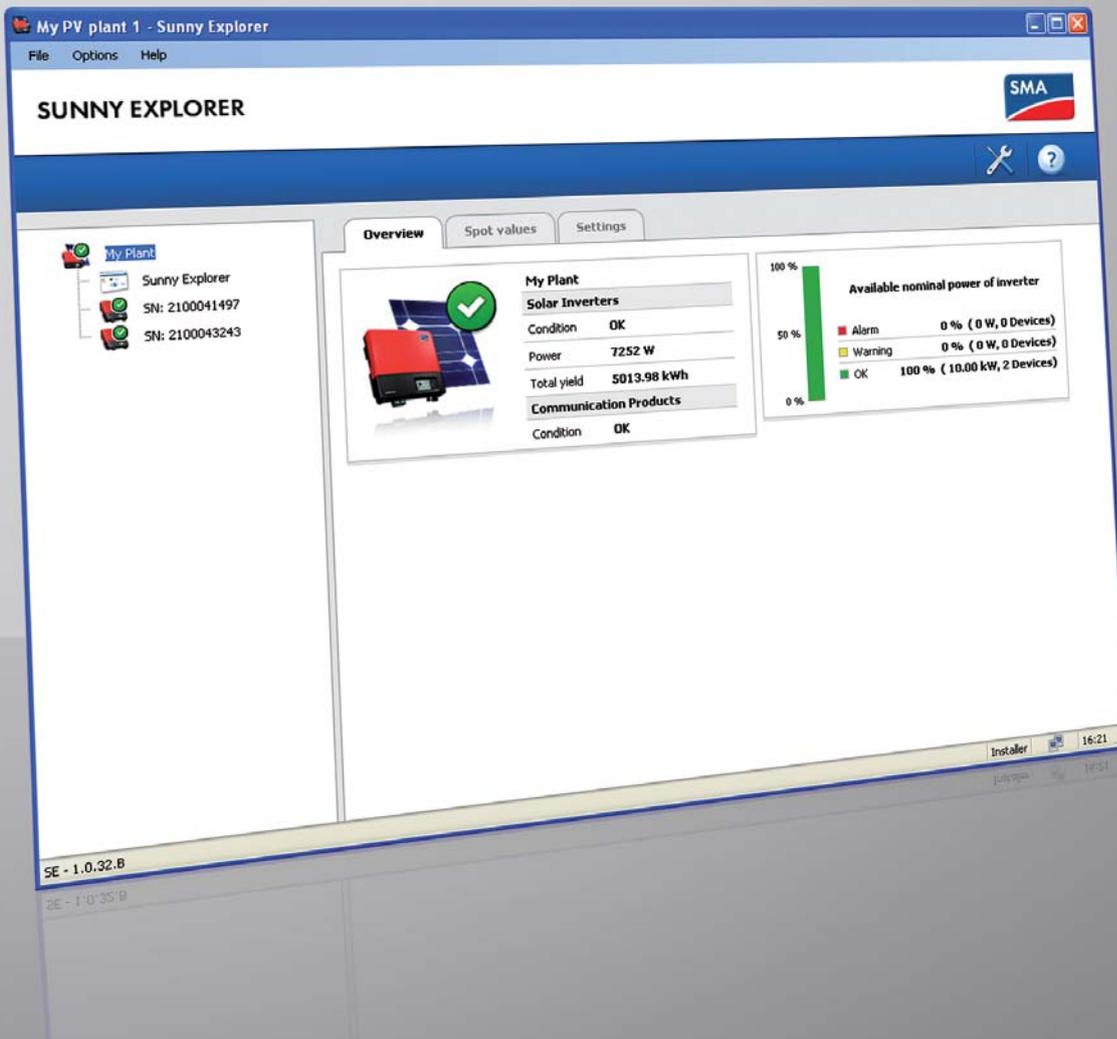
- Easy installation onto the solar generator
- Straightforward integration into existing systems via RS485

- Data analysis on any PC or via Sunny Portal

SUNNY SENSORBOX

Comprehensive performance analysis for professionals

The Sunny SensorBox enables non-stop analysis of generator performance: it is installed directly on to the PV modules and measures solar irradiation and temperature. In combination with Sunny WebBox and Sunny Portal, it provides a continuous target-actual comparison of plant performance. This ensures easy detection of clouding, contamination or a creeping under-performance of the generator. Extra sensor interfaces for optional measurement of ambient temperature or wind speed will make your evaluations even more accurate.



Reliable

- Quick overview of the status of the PV plant
- Easy diagnostics due to event log display
- Safe data transfer through new password system

User-friendly

- Yield overview at a glance
- Graphical display of key system data
- Intuitive interface

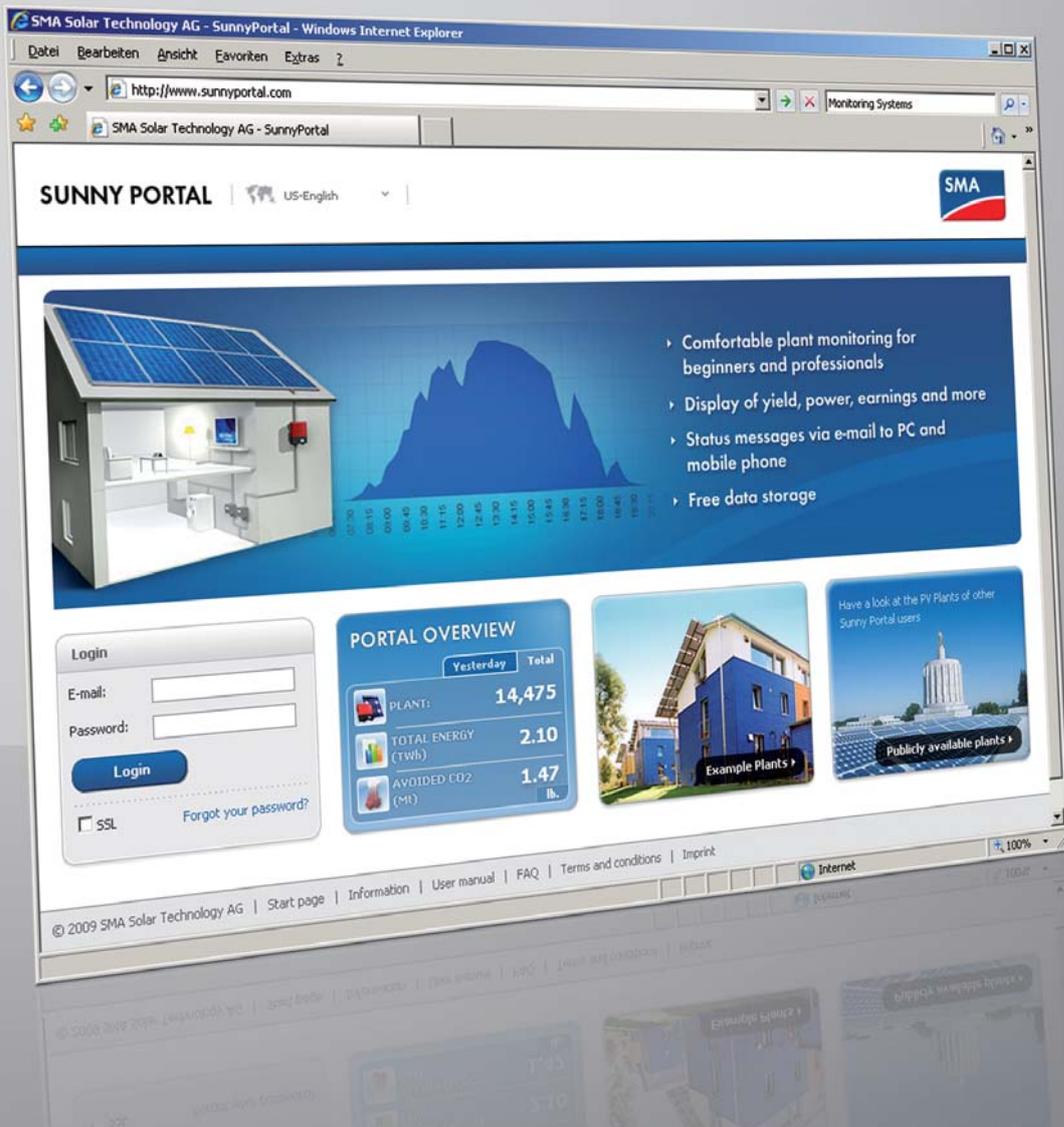
Easy to use

- Wireless monitoring of the PV system with *Bluetooth* technology
- Free PC software for use on your existing PC

SUNNY EXPLORER

The free PC software solution

Switch on notebook or PC, activate the *Bluetooth* interface, start Sunny Explorer – and you have your wind power plant status right at your fingertips. This free PC software is the ideal supplement to the new Sunny Boy generation: the essential plant data is displayed on your PC or notebook – thanks to *Bluetooth*, simply and wirelessly. Sunny Explorer also offers ideal support for inverter configuration: there is no longer any complex wiring involved, so plant maintenance is now a straightforward procedure done in a flash.



Informative

- Access the key data of the system – via the Internet – all over the world
- Individual yield and event reports sent by email

- Evaluation of all data systems displayed in chart and table form
- Neutral link-in to own website

User-friendly

- One password for several systems
- Central management of customer and plant data
- Available in more than ten languages

Individual

- Individual configuration of pages and charts
- Insertion of personal plant images
- Easy configuration of individual access rights

SUNNY PORTAL

Professional management and monitoring of PV systems

Whether for small rooftop systems or large solar energy parks, the central management and monitoring of several PV systems saves time and money. Service staff, contractors and operators are thus able to access the data they need at any time and from any place. Automatically generated pages are customized to specifically meet customer needs; moreover, individual views of the plant or particular devices can be created. Whether displayed in table form or one of the other various types of configurable diagrams, Sunny Portal has the analysis of measured values and the visualization of yield down to a fine art. And the high-performance reporting system provides regular email updates and thus secures your yields.



Informative

- Up-to-date display of key system data
- Calculation of CO₂ prevention, conversion into kilometers driven

- Display of ambient data (provided a Sunny Sensorbox is available)

Easy to use

- Intuitive set-up and operation
- Constant updating of data via network link to the Sunny WebBox

- Standard hardware is sufficient for presentation
- Free download

FLASHVIEW

Professional plant presentation free of charge

Returns, current performance and ambient data: Flashview displays solar yields on any standard PC. Various display options allow for either automatic alternation or manual selection by the viewer. Flashview retrieves the plant data from the Sunny WebBox via an established network link – or optionally via the Internet from any location worldwide. And user-defined plant images or external RSS feeds can be easily integrated.

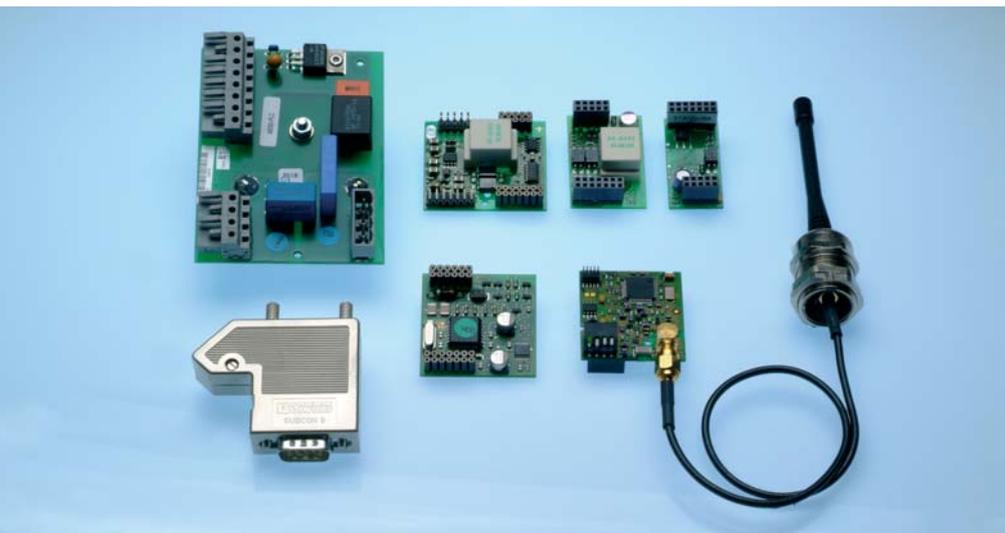
Accessories

Extras for your Windy Boy – high value and accurate



DC adaptor set

Our preconfigured DC adaptor set connects the DC output of your wind generator with the Windy Boy DC input. Simple and reliable. The set is made up of a cable with positive and negative adaptor as well as a connection cap. It is available for plug connectors from Multi-Contact (old and new style) as well as Tyco.



Piggy-Backs for communication

SMA has developed a communication system for quick and easy inspection of PV systems. The Piggy-Backs are individually formulated to the modular design principle. Subsequent extensions are possible without any problems.



USB-Service-Interface

Whether commissioning or in service – with the USB service interface you can quickly and easily access or change the inverter data. It is equipped with a USB Piggy-Back for the inverter and a USB plug for connection to PC or laptop.

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