



# Whisper**Power**Book

**Solar off-grid • Micro-grid**  
**Back-up • Self Consumption**



Off-grid Catalogue 2014-2015



# Imagine yourself living in a house with your own energy provision



You can switch on the lights at any time and use all your 230V or 120V appliances, without any limitations. While watching television you control your climate system on a distance. All made possible by WhisperPower's independent power systems. From low power occasional consumption to heavy duty non-stop requirements, WhisperPower has the right turn-key solution. Cost effective, reliable, silent and efficient. Take for example our 7kW Grid Independer Solar/ Diesel power system, replacing the public grid entirely, utilizing the maximum free energy from the sun. Enjoy reading this catalogue.



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## Introduction

# WhisperPower, generating confidence

WhisperPower is a unique power solutions company that develops, manufactures and distributes hybrid technology based electrical power systems. We combine power electronics, power storage, diesel power generation and power management in a smart and effective way. Our Grid Independent range of products is the result of years of intense R&D and substantial capital investments.

### Background

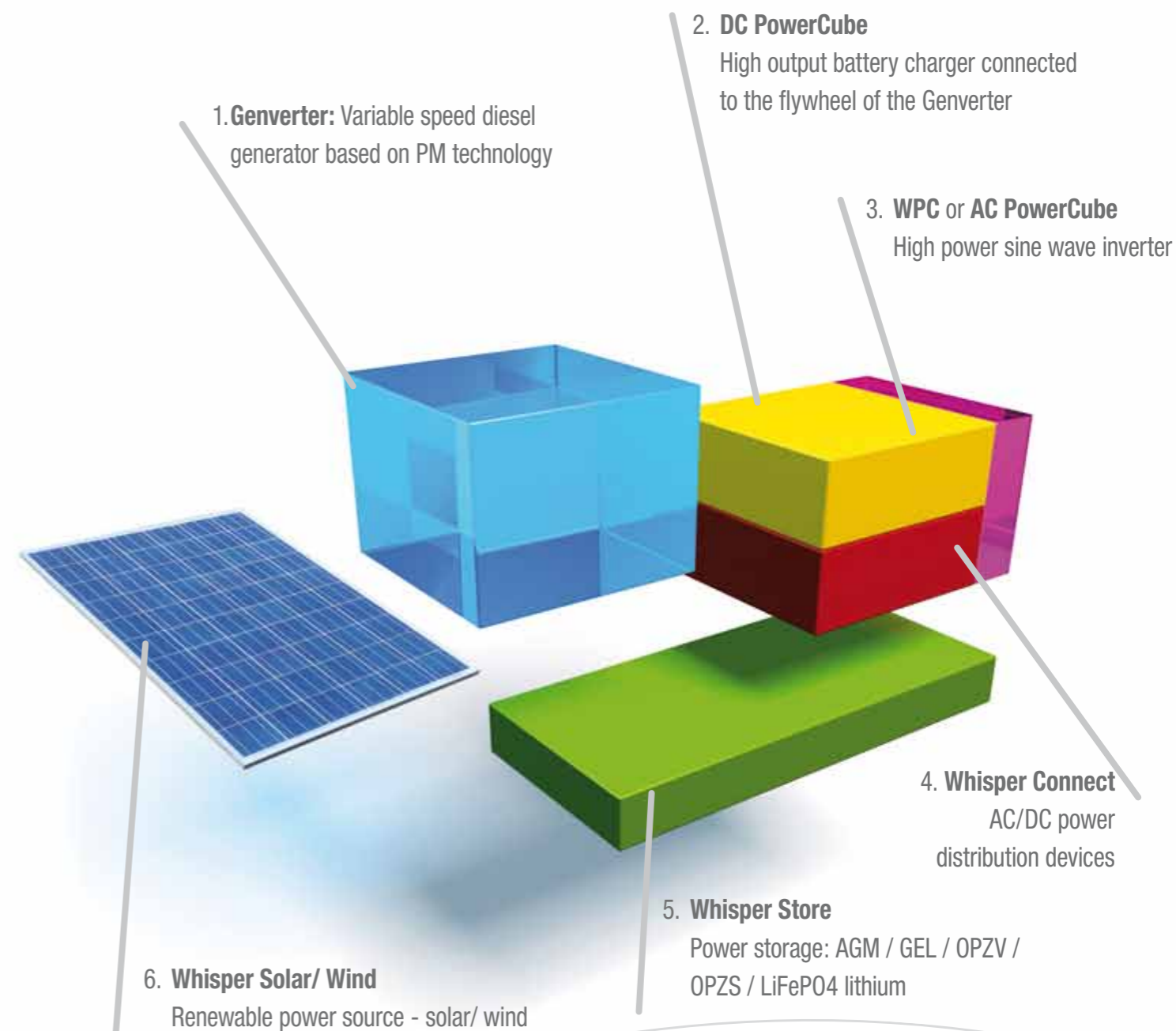
WhisperPower is an established brand with world wide distribution and service. It's founders posses over 25 years of experience in the various on- and off-grid market fields, both with inverter/ battery and diesel generator integrated systems. Most of the manufacturing process is carried out in-house in our 5500 m<sup>2</sup> building, located in Drachten, in the North of the Netherlands.

### Mission

At WhisperPower, we have proven we can make grid-independent electrical power

systems much more efficient, more practical and, most important, **more cost effective** to use. AT the same time, our technology ensures the users a **non-stop power supply**: from the PV array, from the wind generator, or, when renewable power is running short, from the GENVERTER variable speed diesel generator. All of the products and components are engineered together and delivered as one (containerized) configuration. Our products and systems are used in a variety of markets, see next pages for an overview.

## All-in-one Power Packs



# WhisperPower markets and applications

## Recreational & commercial marine markets

Independent sources of energy up to 200kW based on WhisperPower's (hybrid) diesel generators, power storage and power conversion systems.



## Recreational & commercial mobile markets

WhisperPower's vehicle power systems are used in motorhomes, cattle trucks, ambulances, fire trucks, OBI broadcasting vehicles, demonstration vehicles etc.



## Remote power solutions

WhisperPower's hybride systems replace ordinary fixed RPM diesel generators to reduce fuel costs, service expediture and operational costs in a very substantial way (cost savings up to 80%).



## Solar power systems

For the rural electrification market we provide perfect ready- to-use Grid Independe kits from 400 Watt to 3 kW for household or commercial use.



## Utility replacement systems

Our Grid Independe system 'with diesel inside' ensures the user a non-stop, uninterrupted power supply from 1kW- 20kW. Solar modules and/or wind-genrators are always taking the lead in the power provision, WhisperPower's GENVERTER is starting automatically when the battery needs to be re-charged.

## 400W - 3kW • Low power DC & AC systems for rural electrification



# Grid Independer Systems 400W - 3kW

The most effective use of solar energy is connecting a PV module to an energy storage device, a battery. This system enables the user to take power from the battery and use energy during the night when the sun is not shining. WhisperPower's essential products in those systems:

- High Class solar modules and solar charge regulators.
- Heavy duty, long life, maintenance free batteries (AGM or GEL).
- Sine wave inverters for immediate connection to the battery and a plug and play socket on the front.
- Sine wave inverter/ battery charger combinations which can be linked to an auxiliary generator or to the grid. This system can be used as a UPS (Uninterruptible Power Supply) as well in case of unregular availability of the grid

### These systems are ideal to supply AC power to:

- Charge adapters for recharge gear like telephones.
- Computers and PC's.
- Television sets.
- Tools and house hold equipment.
- These systems are ideal to replace AC generators, saving fuel and preventing audible noise.



WP-Sine 12/1000-2000



WP-Combi



Battery AGM 260Ah-12V



WP-Battery Monitor

## Grid Independer Systems 400W - 3kW

## Complete system kits

- Ready to use, plug-and-play
- Pre-mounted configurations, all-in-one box, suitable for outside use

## KIT S1

42001201 12V / 145Ah / 400W 0.5 - **1 kWh** • Solar Charge Controller 15A • **NEW!**

Battery pack 12V / 145Ah • Inverter Power 400W

Pre-mounted and connected in 1 box • Solar Power 90WP (1 module of 90WP)



KIT S1

## KIT S2

42001202 12V / 145Ah / 1000W 0.5 - **1 kWh** • Solar Charge Controller 15A • **NEW!**

Battery pack 12V / 145Ah • Inverter Power 1000W

Pre-mounted and connected in 1 box • Solar Power 250WP (1 module of 250WP)



KIT S2

## KIT S3

42001203 12V / 145Ah / 2000W - **2 kWh** • Solar Charge Controller 15A • **NEW!**

Battery pack 12V / 290Ah • Inverter Power 2000W

Pre-mounted and connected in 1 box • Solar Power 500WP (2 modules of 250WP)



KIT S3

## KIT S4

42002401 24V / 260Ah / 3000W - **3 kWh** • Solar Charge Controller WP-Suntrack 65A • **NEW!**

Battery pack 24V / 260Ah • Inverter Power 3000W

Pre-mounted and connected in 1 box • Solar Power 1500WP (6 modules of 250WP)

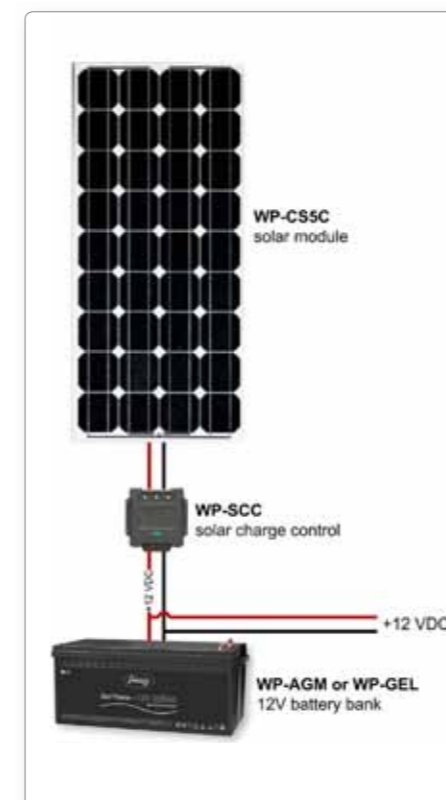
Incl. UPS functionality • Batteries can also be charged by Grid / Generator



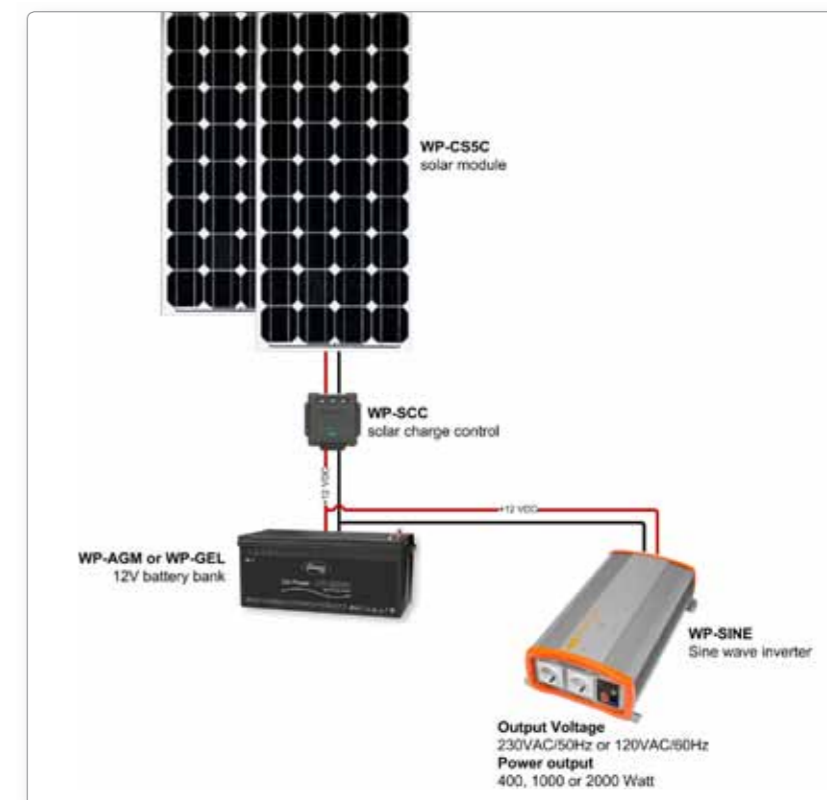
KIT S4



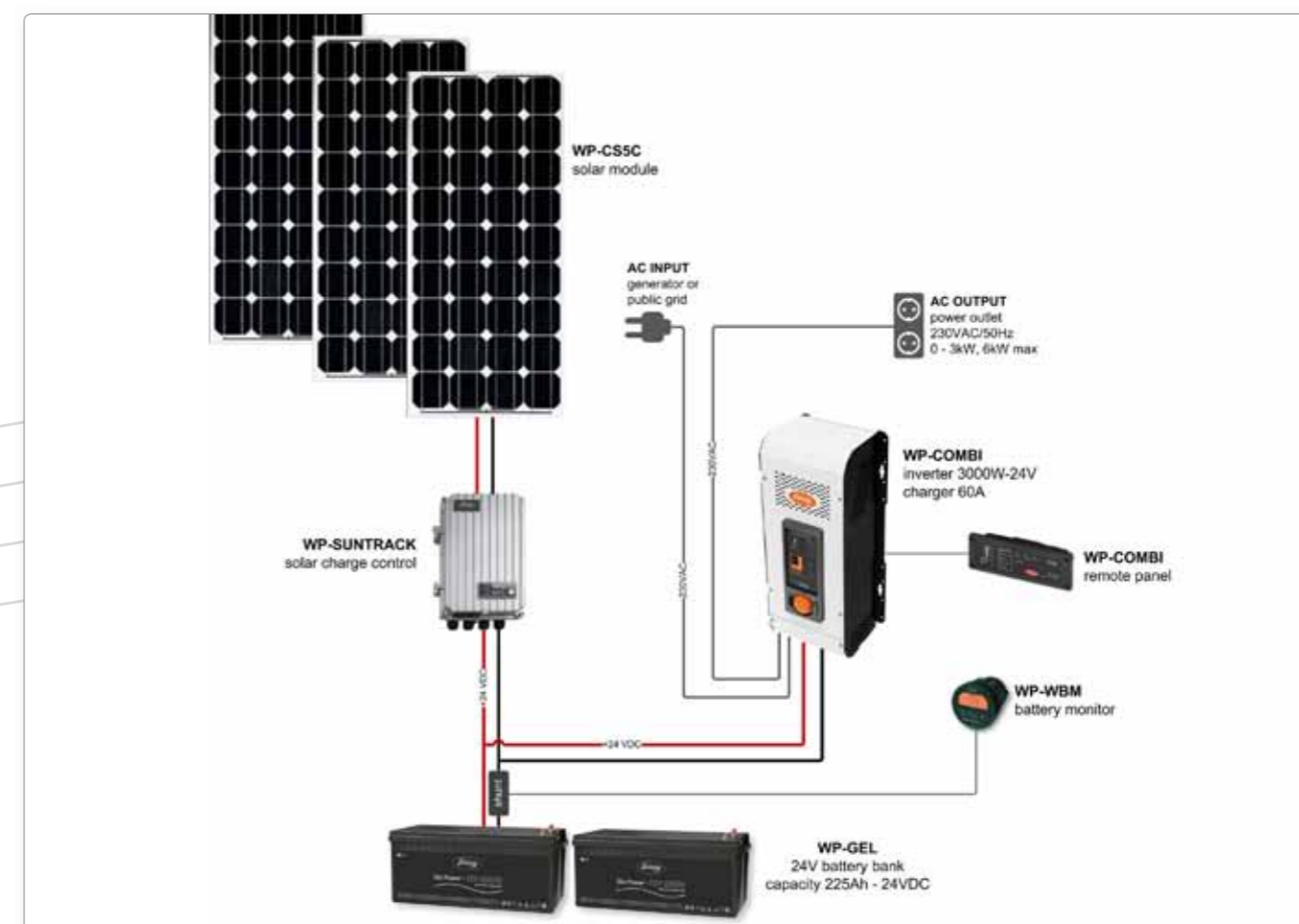
## Schematic diagrams of system kits



WP Solar System 12VDC



WP Solar System S1, S2, S3 DC &amp; AC System, 12V - 230VAC/50Hz



WP Solar System S4 DC &amp; AC System, 24VDC - 230VAC/50Hz - 0.3kW • 120VAC/60Hz - 0.3kW

# Grid Independer 'S'

## 3kW - 7kW

Solar Modules offer a perfect way to produce 'free of charge' clean electrical power. But what about unexpected dark days without sunshine or sudden high power demand, exceeding the radiation intensity of the sun? Batteries will be discharged quickly, causing DC and AC appliances to switch off. WhisperPower's Grid Independer is the ideal solution to ensure a NON - STOP power supply, under any condition. In case solar power is insufficient, batteries will be topped up entirely by the automatic GENVERTER diesel generator / battery charger. In case of high AC power demand, the GENVERTER and WPC inverter work together, in parallel, to produce the required extra electricity. Grid Independer systems are available from 3kW – 20kW power rating.

### Concept explained

Solar Modules are in general installed on a roof or at a mounting system on land. The position of the solar modules at this picture just illustrative

Deep cycle 'long life' batteries, any technology or size can be supplied. In this version 10kWh GEL power storage is integrated. (48VDC/ 700Ah)

Robust steel chassis, open style, can be equipped with side covers. Any style or size can be supplied

WPC sine wave inverter of 4kW non-stop power to operate the various AC appliances, utilizing the 48VDC battery. Peak power 12kW. 7kW power with working Genverter

Genverter variable speed generator of 3.6kW continuous power, 7kW with WPC inverter in parallel operation

Suntrack MPP Charge controller for optimised charging of the battery



Remote monitoring: Wi-Fi , GSM, or in-house domotica



Ready - to - operate: AC power distribution box with 2 x 16 Amp breaker outlets and earth leakage switch. DC cables, including battery switches etc are all pre- installed.

Integrated fuel tank

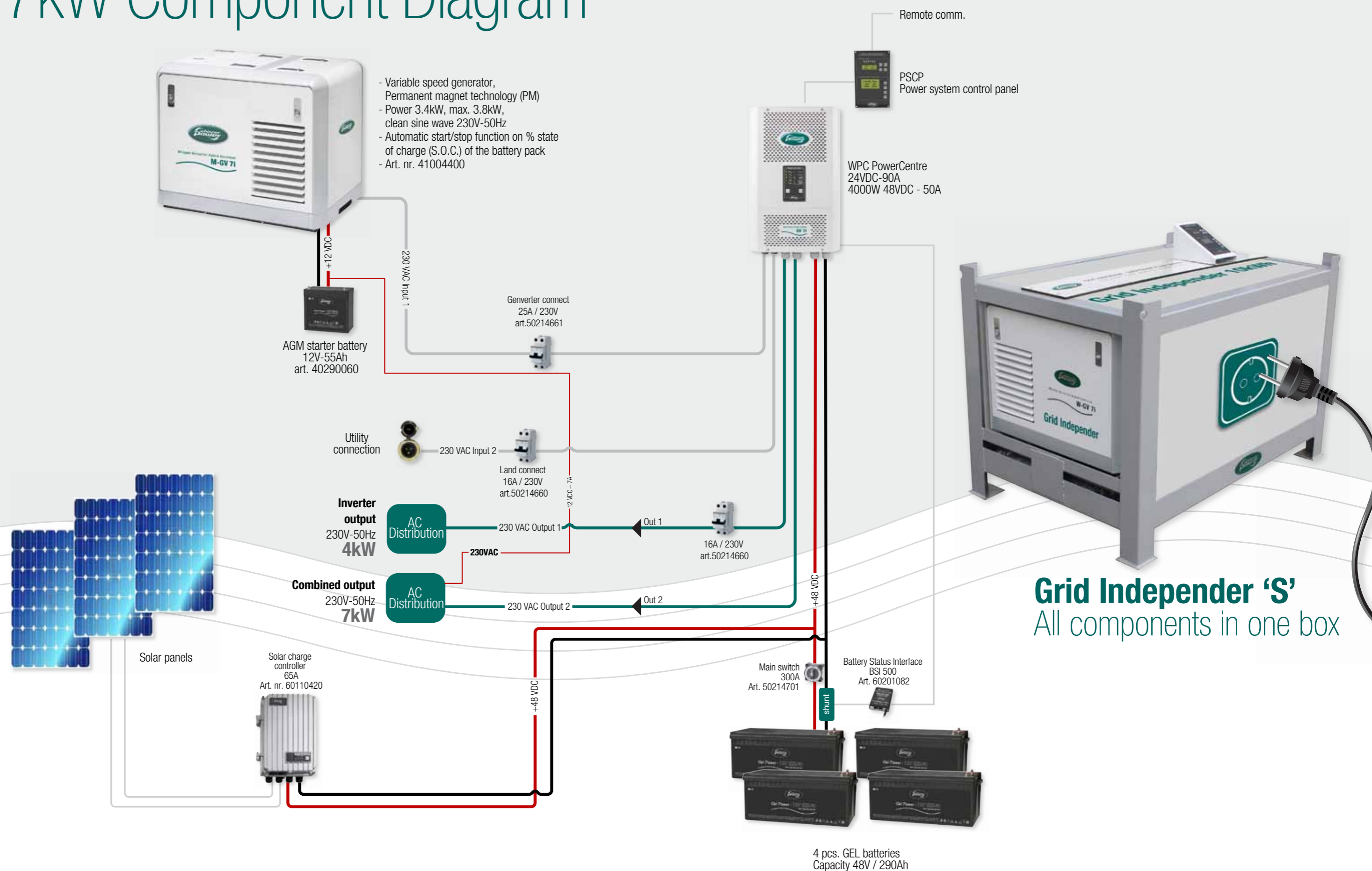
Grid Independer XL

### Grid Independer 3-7kW brief specifications\*)

GRID INDEPENDER HYBRID POWER SYSTEM	
SYSTEM SPECIFICATIONS	
Combined system output	7kW
Generator power (running engine)	3.6kW
Silent power (inverter mode)	4kW
GENERATOR SPECIFICATIONS	
Max. output AC	36A
Nominal voltage AC	230VAC *)
Nominal current AC	16.5A, 3.6kVA
Nominal frequency AC	50.0Hz
Thd nominal operation AC	<5%
Leading or lagging power factor	0.1 - 1
Parallel use with AC grid (<25A)	silent mode only
SPECIFICATIONS DIESEL ENGINE	
Engine model	Whisper WP1-4
Number of cylinders	1
Cylinder capacity	300cc
Air consumption	0.42 m³/min @3000rpm
Engine cooling	fully oil cooled, by radiator
Fuel consumption (no load-full load)	0.8- 1.5l/h
INVERTER SPECIFICATIONS	
Silent power 25°C	400VA / 4kW
Silent power 5	10.000VA / 10kW
Standby consumption	1.8W
Efficiency (typical)	96%
BATTERY CHARGER SPECIFICATIONS	
Charge current	50A (24VDC), 3-step
Charge from AC grid	160 - 260VAC
Temperature sensor	yes, included
MECHANICAL SPECIFICATIONS	
Cooling	radiator/air
Dimensions incl. sound sh.	t.b.d.
Dry weight	appr. 170Kg, excl. batteries
Alternator	air-cooled permanent magnet
Material/Color	sheet metal/RAL 9003
Temperature range operational	-20°C to 40°C
Protection degree	engine compartment IP44, electronic compartment IP23
Relative humidity	max. 95% relative humidity, none condensing

\*) 120 VAC/60Hz at request

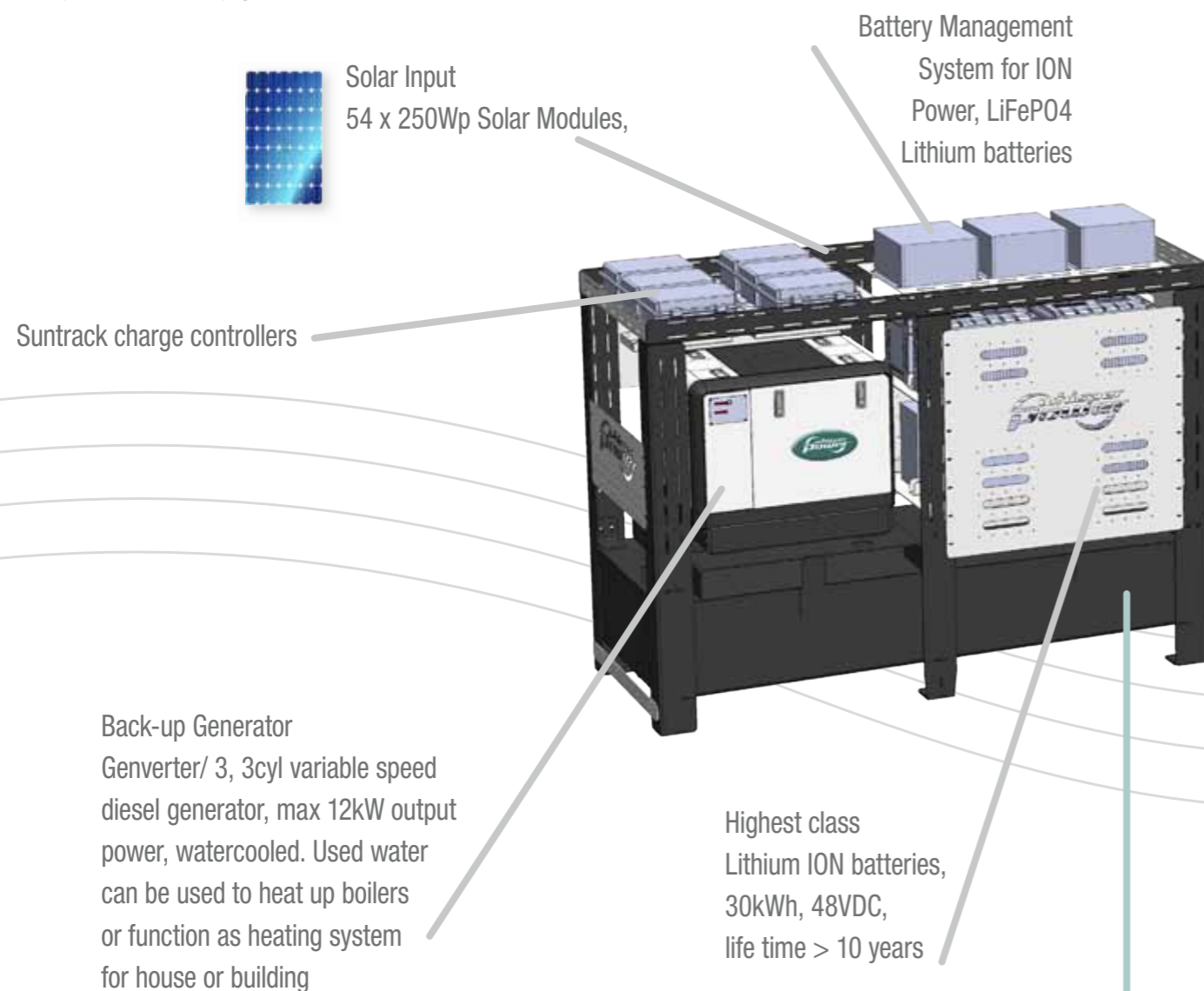
# 3 / 7kW Component Diagram



## Grid Independe XL >7kW

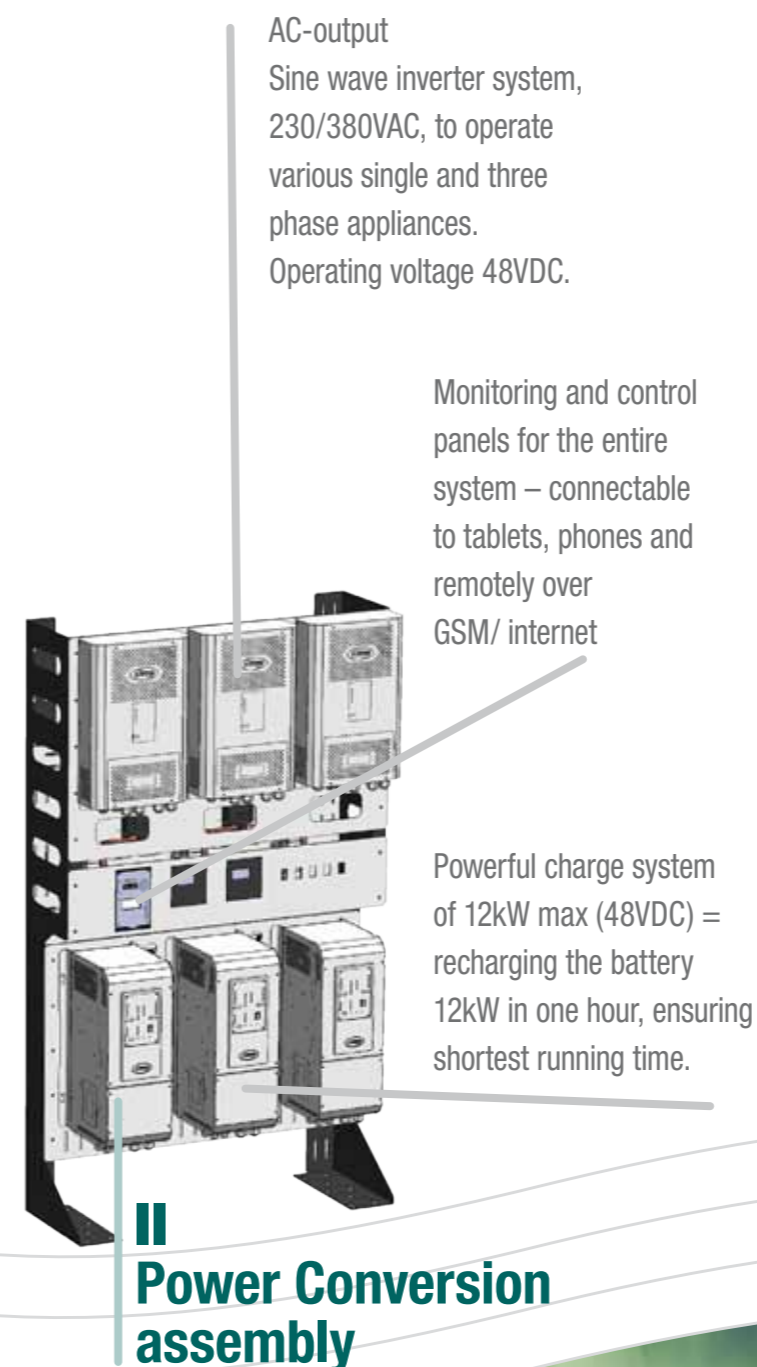
# Concept Explanation

WhisperPower's XI-IH (Independent Home) model is the latest addition to the Grid Independe product range. It provides an extended grid independent power system with a storage capacity of 20 to 30kWh and an AC power output of 12kVA ( 230/380 -50Hz VAC, three phase, or single phase). The system can be supplied in any customized frame, or container, if desired, with all required components pre-installed, including ready-to-plug in connections for solar modules (in this system example 54 modules of 250 Wp each) and AC power outlets for (home) appliances. The XI-IH system is also available for supply in parts for installation in places such as basements. Extensive tablet based automation (Domotica) and remote monitoring can also included with the system. Below we show an example of a system recently supplied to a customer who wants to live independent of utility grid.



## I Power Storage & Power Generation assembly

## Grid Independe XL >7kW brief specifications\*)



### GRID INDEPENDER HYBRID POWER SYSTEM

#### SYSTEM OUTPUT SPECIFICATIONS

System output	12kW
Output voltage	230V / 380VAC, 50Hz
Peak power	36kW

#### SYSTEM INPUT SPECIFICATIONS

Genverter	12kW charge current
Nominal voltage DC	48VDC
Solar array charge current	13.5kW
Solar modules	Poly / mono 54 x 250W
String voltage	Max. 150VDC
Charge voltage	48VDC nom.

#### SPECIFICATIONS DIESEL ENGINE

Engine model	Kubota 3 cyl.
Number of cylinders	3
Generator	PM variable speed
Cooling principal	Watercooled
Cooling by	Radiator or intercooling
Fuel consumption (no load-full load)	1 - 3l/hour

#### INVERTER SPECIFICATIONS

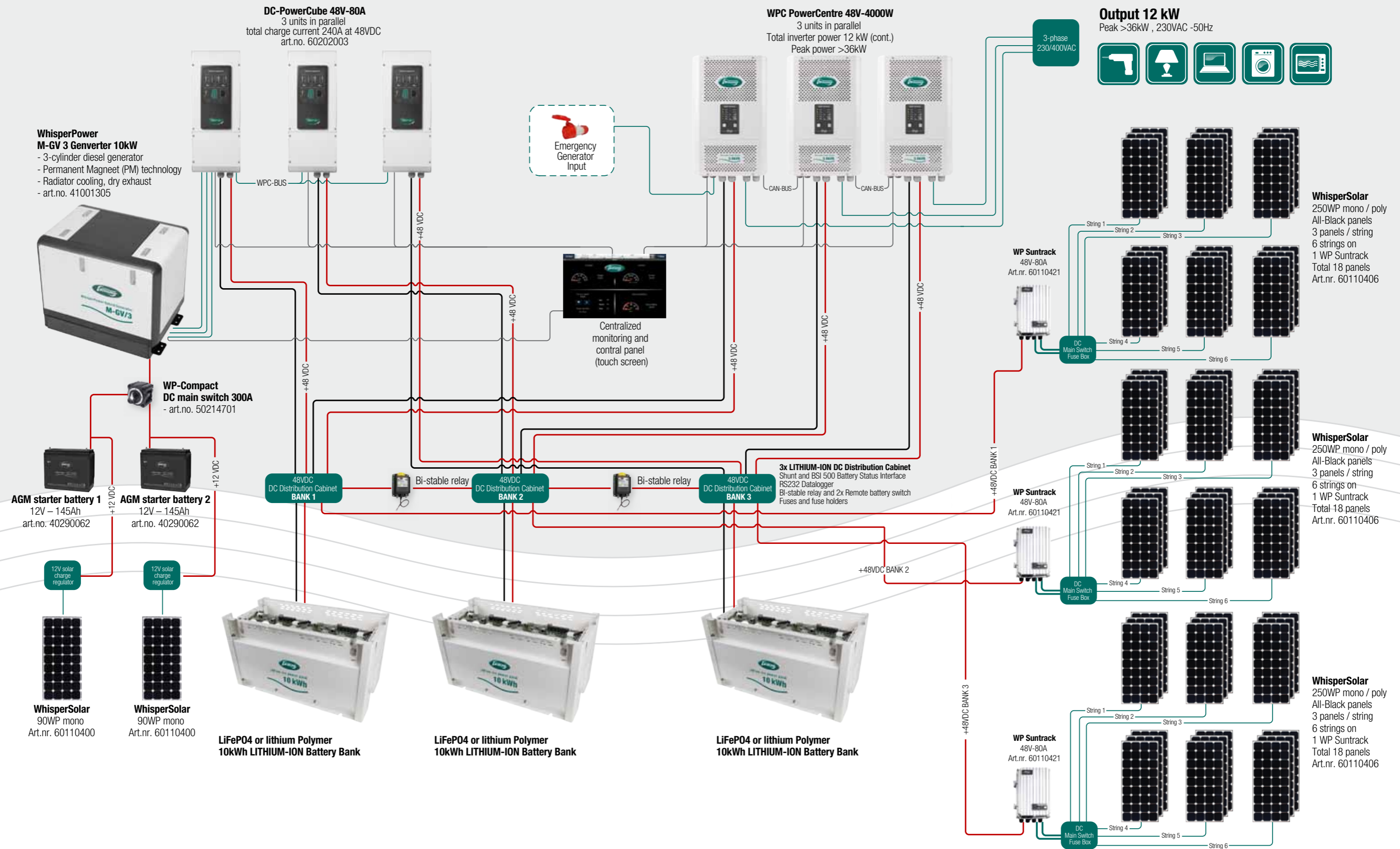
Model	WPC
Configuration	3x WPC in parallel
Cont. power	10kW
Output voltage	single or 3-phase

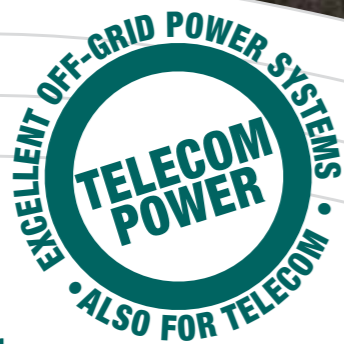
#### BATTERY SPECIFICATIONS

Technology	High density Lithium Polymer
Capacity	30kWh total
Usable capacity	24kWh C/5 discharge
Configuration	3 x 10.98 kWh
DC voltage	51.8VDC nominal
Cell make	Kokam
Lifetime	> 10 years with daily cycles
BMS	included
120 / 208/ 400 VAC, single or three phase also available	

# Schematic diagram of Grid Independent XL-IH

## Independent Home





# WhisperPower Back-up Power (Hybrid Power)

In case solar modules cannot be used, in a limited way, WhisperPower is offering a smart solution. Transportable objects like small containers, trailers and shelters do not have the space to fit solar modules, in general.

To install non-stop running generators is not a very attractive alternative from an economical and environmental point of view. Our Genverter DC PowerCube concept is THE solution for power requirements up to 10-30kWh per day.

The system consist of:

- A super silent 2 or 3 cylinder diesel engine (Kubota or Mitsubishi), water cooled.
- A water cooled permanent magnet alternator of 4 or 8kW.
- A High Class industrial DC PowerCube 3-stage charger of 4.3kW power rating.
- Or even 2pcs DC PowerCube of 8.6kW in total, operating with our 3 cylinder Genverter.
- Heavy duty Gel or Lithium ION batteries.
- We make systems for various ambient circumstances, from -40°C to +55°C, eventually pre-installed in containers or trailers
- Remote monitoring web-based or GSM mode.

The output voltage of these systems can be either 24VDC, 48VDC, 120V/60Hz or 230V /50Hz AC.



Genverter 2 or 3 cyl



DC PowerCube 4.3 kW

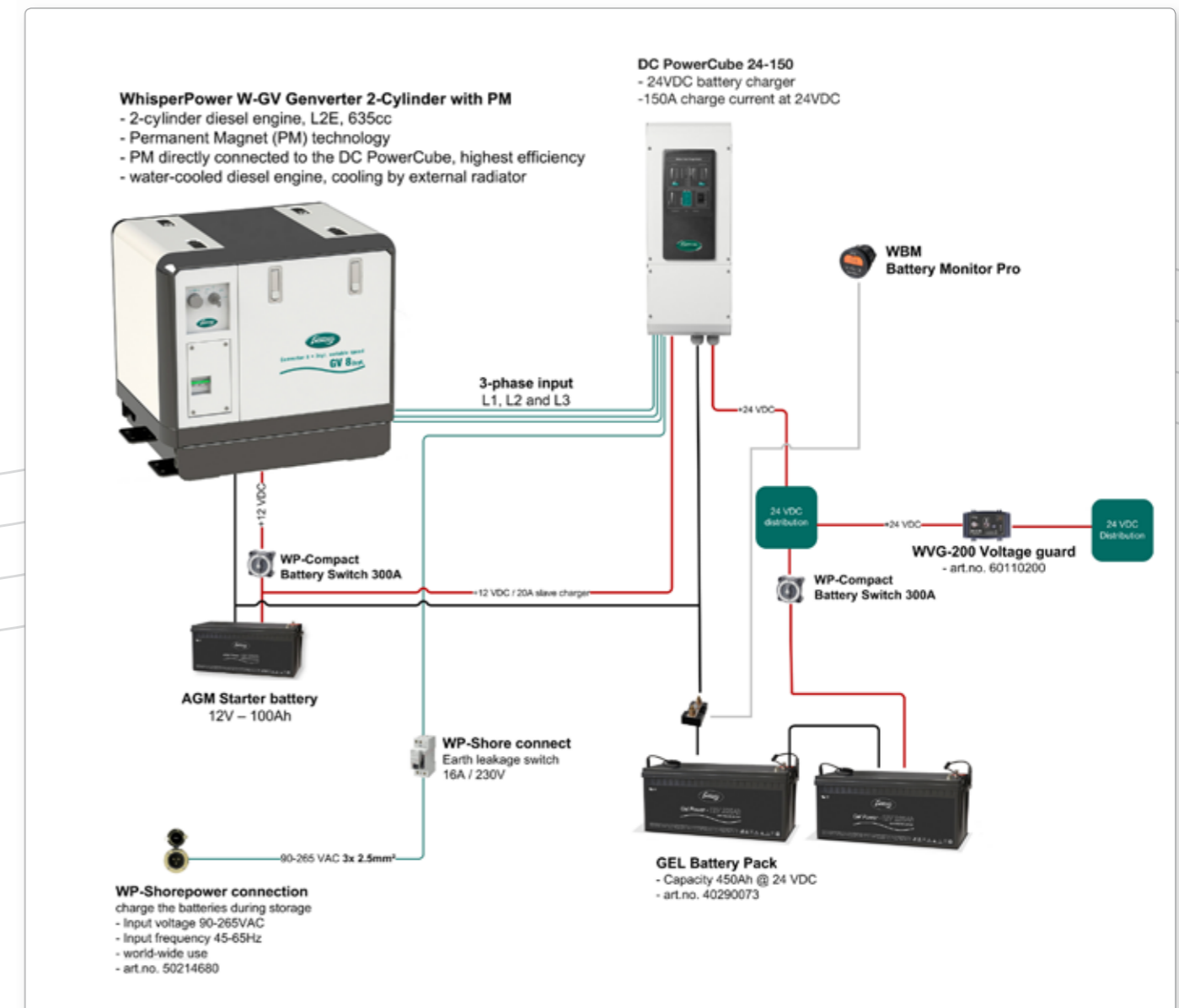


PM - Permanent Magnet technology applied



WP Lithium Ion LiFePO4 or lead acid

## System diagram DC back-up/ stand-by system



Application examples





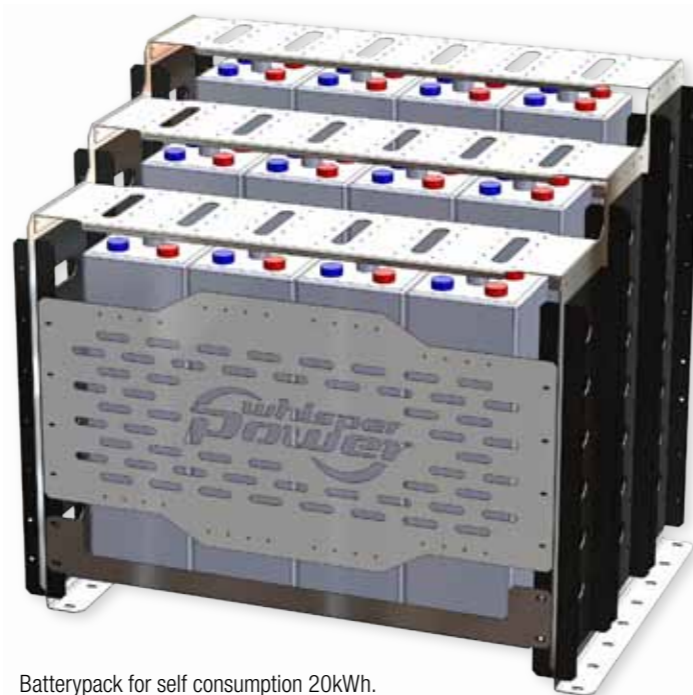
From now on I produce  
my **own power**  
(with or without mains)

# Grid Connected/ Off-grid / Self Consumption

In countries with a high penetration degree of grid connected solar systems (systems with solar modules connected via a DC to AC inverter to the public grid) the so called SELF CONSUMPTION ad-on system is becoming popular. Why?

In general, the amount of solar power produced does not match the amount of electricity used in the household. In particular, power consumption will exceed the self produced energy amount in the morning and at night, and also during the winter months. By shifting household consumption into the high phase of solar power production, it is possible to increase the consumption of self-generated electricity, which is CHEAPER than the energy supplied by the utility companies, in general.

The use of battery storage systems, which store excess energy and provide energy on demand required, can increase the CONSUMPTION LEVEL OF SELF PRODUCED ENERGY up to 70%. The WhisperPower Grid Independer storage system carries STORAGE and provide BACK-UP power during periods of power outages. The Grid Independer is the way to absolute independency and freedom.

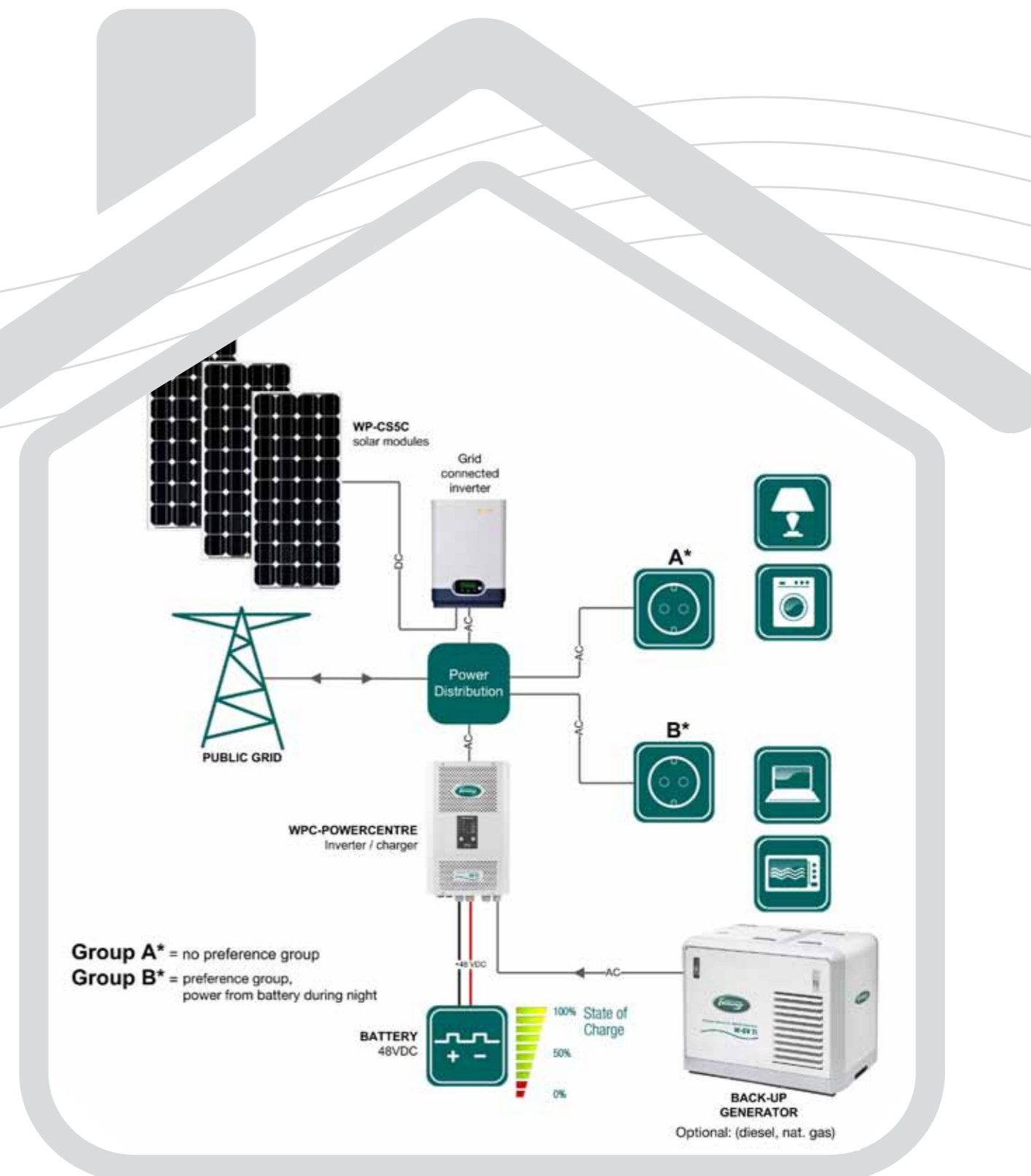


Batterypack for self consumption 20kWh.  
See page 35 for our OPZV battery selection

## Grid connected system

# with self consumption

System example



WP Grid Independer Solar System S6 -Grid Connected System with Back-up Generator

# Product Specifications



Sine wave inverter WP-Sine series

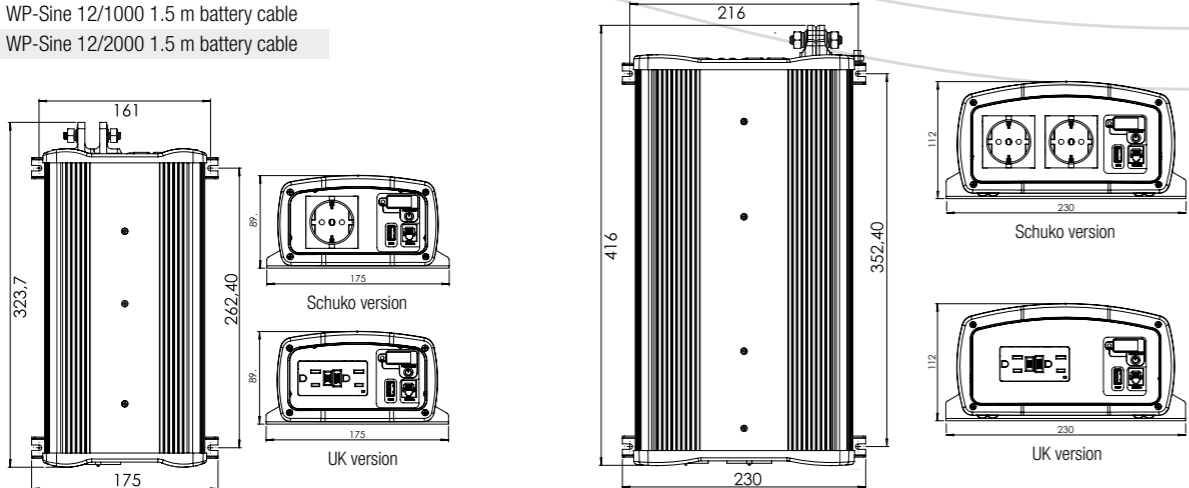


	WP-SINE-12/400	WP-SINE-12/1000	WP-SINE-12/2000	WP-SINE-12/1000UK	WP-SINE-12/2000UK
Article nr.	61120510	61121500	61122500	61121501**	61122501**
AC OUTPUT					
Power (Continuous)	400W	1000W	2000W	1000W	2000W
Power (Peak, 500 mSec)	800W	2000W	4000W	2000W	4000W
Output voltage	230V	230V*	230V	230V	230V
Output frequency	50Hz	50Hz	50Hz	50Hz	50Hz
Total harmonic distortion (THD)	<5% true sine wave	<5% true sine wave	<5% true sine wave	<5% true sine wave	<5% true sine wave
DC INPUT					
Nominal battery voltage	12V	12V	12V	12V	12V
Operation range	10.5 - 15.5V	10.5 - 15.5V	10.5 - 15.5V	10.5 - 15.5V	10.5 - 15.5V
Input current	40A	94A	187A	94A	187A
No load consumption	0.4A typical	0.8A typical	1.6A typical	0.8A typical	1.6A typical
DC OUTPUT					
5V USB - Phone Charge	750mA	750mA	750mA	750mA	750mA
DISPLAY					
LED indicator	No	Yes	Yes	Yes	Yes
Digital display	Input Voltage / Current, Output Power				
PROTECTIONS					
Input Undervoltage Warning	11.2V	11.2V	11.2V	11.2V	11.2V
Input Undervoltage Shutdown	10.5V	10.5V	10.5V	10.5V	10.5V
Input Undervoltage Recovery	11.8V	11.8V	11.8V	11.8V	11.8V
Input Overvoltage Shutdown	15.5V	15.5V	15.5V	15.5V	15.5V
Output Power Warning	Yes	Yes	Yes	Yes	Yes
Output Power Shutdown	Yes	Yes	Yes	Yes	Yes
Output Short Circuit	Yes	Yes	Yes	Yes	Yes
Temperature Warning	Yes	Yes	Yes	Yes	Yes
Temperature Shutdown	Yes	Yes	Yes	Yes	Yes
Conformity	Directive EMC 2004/108/EC Low voltage directive 2006/95/EC				
Operating temperature range	-20 - 55°C (derating above 40°C)				
Relative humidity in operation	95% without condensation				
Ventilation	Forced cooling				
Dimension hxxwxd [mm]	175x200x89 mm	185x319x90 mm	240x420x115 mm	185x319x90 mm	240x420x115 mm
Weight	1.7 kg	2.9 kg	5.5 kg	2.9 kg	5.5 kg
Battery connection	M6 studs	M6 studs	M8 studs	M6 studs	M8 studs
Ground Lug Connection	M6 studs	M6 studs	M6 studs	M6 studs	M6 studs
AC output	1 x Schuko socket	1 x Schuko socket	2 x Schuko sockets	1 x UK socket	2 x UK sockets
Warranty	2 years	2 years	2 years	2 years	2 years

WP-Sine Accessoires

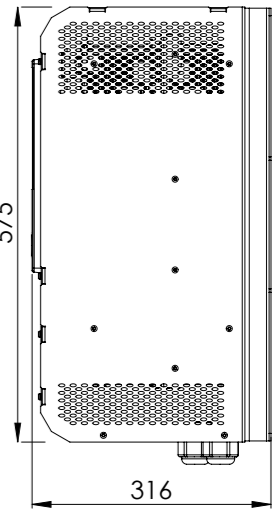
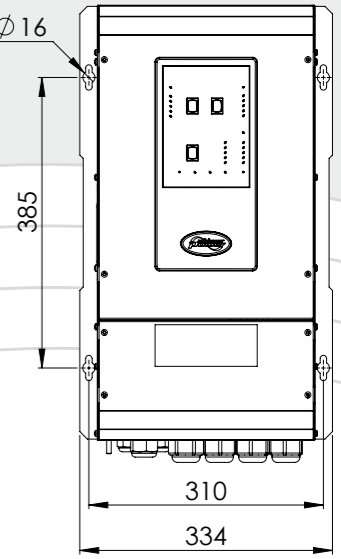
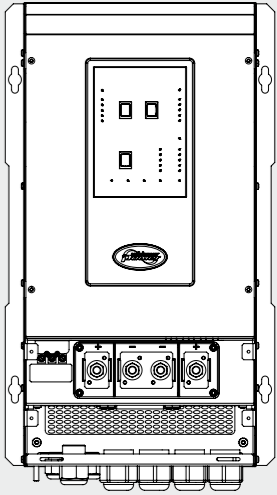
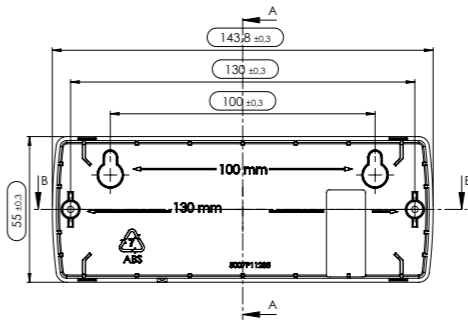
Art. Nr.	Item
61121510	WP-Sine Remote on/off switch
61121511	WP-Sine 12/1000 1.5 m battery cable
61121512	WP-Sine 12/2000 1.5 m battery cable

\*120V/60Hz also available  
24VDC models available from Spring 2014  
\*\*UK socket at front



Sine wave inverter WP-ACP AC PowerCube

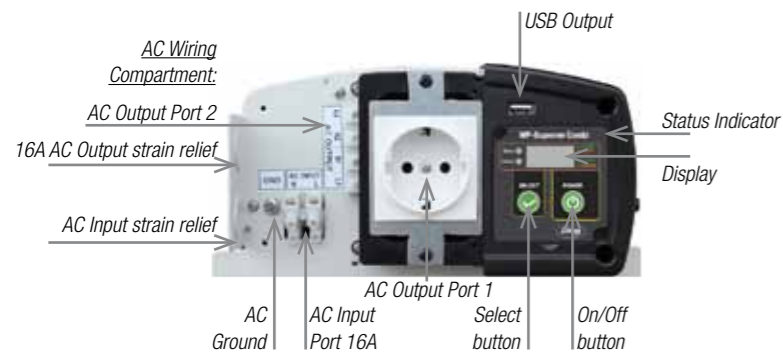
	AC POWERCUBE 24/7000	AC POWERCUBE 24/14000
Art. Nr.	60203006	6020xxxx
GENERAL		
Nominal output voltage	230V (± 5%), 1-phase, 3-wired	230V (± 5%), 1-phase, 3-wired
Nominal output frequency	50Hz (± 0.01Hz)	50Hz (± 0.01Hz)
Nominal battery voltage	24V (2 inputs, common ground)	24V (2 inputs, common ground)
Rated power P30 (cos phi) = 1 (30 min. at 40°C / 104°F)	7500W	14000W
Peak power (20 sec.)	15000W	28000W
Continuous power (cos phi) = 1 (40°C/104°F)	6000W	12000W
AC connection	Internal screw terminal connection (4 .. 6mm²)	
DC connection	4 × M10	4 × M10 (2 per battery bank)
Minimum battery capacity	600Ah (summarised)	600Ah (summarised)
Efficiency	> 85%	> 85%
Peak efficiency	> 92%	> 92%
Dimensions, w × d × h	310 × 316 × 575mm	700 × 316 × 575mm
Weight	18kg	40kg
Sound level (1 meter distance)	48dBA	48dBA
Controls	Main switch (On / Off / Remote), DC source switches (On / Off), Remote panel switch (On / Off)	
Indicators	AC present, DC 1 input present, DC (1) load, DC 2 input present, DC (2) load, AC current, AC voltage, Overload, Temperature, UVP, OVP, Failure	
Protection	Short circuit, Overload, Overheating, Battery low / high	
TECHNICAL SPECIFICATIONS		
Technology	Six-stage multi-phase flyback, switch mode	
Low battery switch off	19 V (± 0.5V)	19 V (± 0.5V)
Low battery switch on	22 V (± 0.5V)	22 V (± 0.5V)
High battery switch off	32 V (± 0.5V)	32 V (± 0.5V)
High battery switch on	30 V (± 0.5V)	30 V (± 0.5V)
Maximum ripple on DC (battery)	5% RMS	5% RMS
Input current (nominal load)	2 × 200A	4 × 200A
No-load power consumption (On mode)	< 550mA, 12W	< 2 times 550mA, 24W
THD (Total harmonic distortion) voltage	< 5% (typical)	< 5% (typical)
Allowable power factor	0 < cos phi < 1	0 < cos phi < 1
CONDITIONS		
Ambiant working temperature	-20°C .. 40°C / -4°F .. 104°F	-20°C .. 40°C / -4°F .. 104°F
Storage temperature	-25°C .. 80°C / -13°F .. 176°F (derating above 40°C/104°F)	-25°C .. 80°C / -13°F .. 176°F (derating above 40°C/104°F)
Relative humidity	Max. 95%, non-condensing	Max. 95%, non-condensing
Protection degree	IP23	IP23
Cooling	natural / forced	
COMPLIANCE		
Directives	EMC 2004/108/EC, EMC 2004/104/EC (automotiv), LVD 2006/95/EC	
Standards	EN 55022 (emission), EN 61000-3-2 (harmonics), EN 61000-4-11, EN 61000-3-3 (voltage fluctuations), EN 61000-6-2 (immunity), EN 60950-1 (safety), EN 68-2-6 (vibration), EN 60945 (maritime navigation and radiocommunication), UL 458 (power converters / inverters)	



# Inverter Charger **Supreme Combi**

	WP-SUPREME COMBI 1000-40	WP-SUPREME COMBI 2000-55
Article nr.	61121040	61122055
INVERTER		
AC Output Power	1000W	2000W
AC Output Current	4.3A	8.7A
AC Surge Power (Peak)	2000W	4000W
AC Output Voltage/Frequency	230VAC / 50Hz	
AC Output Waveform	Sinewave (<3% THD)	
Nominal DC Input Voltage	12.5VDC	
No Load battery draw	< 1.5ADC	
DC Input Voltage operating range	10.5 – 15.5VDC	
Under Voltage Alarm	11.0/12.1VDC	
Under Voltage Alarm Recovery	11.3/12.3VDC	
Under Voltage Shutdown	10.5/11.8VDC	
Under Voltage Recovery	12.0/12.6VDC	
Over Voltage Shutdown	15.5VDC	
USB		
USB Port - Cell Phone Charger	5V, 750mA	
AC TRANSFER SWITCH		
Transfer Time	< 30ms	
Transfer Relay Rating	16A	
AC Input Source Setting	8, 10, 16A	
AC Output Port 1 (AC Socket) CB1-3	16A max	
AC Output Port 2 (Hard Wire Connector)	16A max	
DISPLAY		
Display Panel Port	RJ12	
Inverter Mode	Input Voltage, Output Power	
Charger Mode	Status & Battery voltage	
CHARGER		
Charging Voltage Range	13.5 -14.4VDC	
Float Voltage Range	13.4 – 13.8VDC	
Charger Current (max)	40ADC	55ADC
Charger Current Setting	5,10,20,40	5,15,35,55
Battery Type	Gel, Flooded, AGM, Fixed	
Charge Control	Bulk/Absorption/Flooded	
Efficiency	>80%	
SAFETY AND ENVIRONMENTAL		
Agency Markings	CE	
Operating Temperature	0°C to 40°C (32°F to 104°F)	
Storage Temperature	-20°C to 60°C (-4°F to 140°F)	
Relative Humidity	5-90% noncondensing	
Operating Altitude	Up to 9,843ft (3000m) above sea level	
WEIGHTS AND DIMENSIONS		
Weights	12.5lbs (5.7kg)	14.5lbs (6.6kg)
Dimensions	9.0 x 18.8 x 4.5" ( 230 x 478 x 114 mm)	

AC Output Front Panel



DC Input Rear Panel



2 models:

WP-Supreme Combi 1000-40

WP-Supreme Combi 2000-55



Size: 12/1000



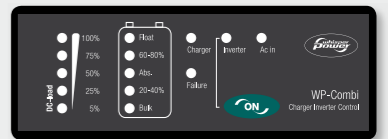
Size: 12/2000



Front Display with LCD screen

Art. Nr.	WP-COMBI 12/2000-80	WP-COMBI 24/3000-60	WP-COMBI 48/3000-30
<b>TECHNICAL SPECIFICATIONS</b>			
Inverter	True Sine wave	True Sine wave	True Sine wave
Nominal battery voltage	12VDC	24VDC	48VDC
Input voltage range	10..16VDC	20..32VDC	40..64VDC
Power @ 25°C	2000W	3000W	3000W
Continuous Power @ 40°C	1800W	2600W	2600W
Power 1 min. @ 25°C	2500W	3300W	3300W
Power 20 sec. @ 25°C	3000W	4500W	4500W
Maximum load	fully protected up to short circuit		
Maximum a-symmetric load	1000W	1500W	2000W
Load detection (standby)	>15W	>20W	>20W
Power factor	up to 1	up to 1	up to 1
Efficiency (@ full load)	88%	92%	92%
Zero load power	<20W	<25W	<25W
Standby power (load sense)	<5W	<5W	<5W
Output voltage	230VAC +/- 3%	230VAC +/- 3%	230VAC +/- 3%
Output frequency	50Hz +/- 0.5%	50Hz +/- 0.5%	50Hz +/- 0.5%
Harmonic distortion (voltage)	THD<3% THD<3% THD<3%		
Overload and short-circuit protection	auto disconnect after 3 start attempts		
Overheat protection	Yes (The WP-Combi has to be restarted manually)		
Charge characteristic	IUU Multi step	IUU Multi step	IUU Multi step
Battery type	Bulk voltage (12V/24V/48V)	ABS voltage (12V/24V/48V)	Float voltage (12V/24V/48V)
GEL	14.40V / 28.80V / 57.60V	14.25V / 28.50V / 57.00V	13.80V / 27.60V / 55.20V
AGM	14.40V / 28.80V / 57.60V	14.25V / 28.50V / 57.00V	13.80V / 27.60V / 55.20V
Open lead acid	14.25V / 28.50V / 57.00V	14.25V / 28.50V / 57.00V	13.25V / 26.50V / 53.00V
Traction	14.60V / 29.20V / 58.40V	14.45V / 28.90V / 57.80V	13.25V / 26.50V / 53.00V
Equalizing voltage (for 30 minutes)	15.5VDC	31.0VDC	62.0VDC
Maximum charging current	Max. 80A (adjustable)	Max. 60A (adjustable)	Max. 30A (adjustable)
Temperature compensation	-30mV/°C (by external temperature sensor)	-60mV/°C (by external temperature sensor)	-120mV/°C (by external temperature sensor)
Slave charger	12V/3A	24V/3A	No
Power factor correction	yes	yes	yes
Operating modes (front accessible)	On / Off / Charger only	On / Off / Charger only	On / Off / Charger only
Local user interface	State of load, state of charge, inverter on/off, charger only mode, AC present, current control, charger settings (capacity, battery type, low voltage detection settings, operation mode)		
Remote panel (RJ12)	State of load, state of charge, inverter on/off, AC present		
Input voltage range	194..250Vac (UPS mode)	170..265Vac (GEN mode)	
Input frequency range	45..65Hz (UPS mode)	40..70Hz (GEN mode)	
Input current max	30A (protected by internal circuit breaker)		
Charging input current (max charging current @ 230Vac)	4.5A (adjustable with the knob on the front)	6.6A (adjustable with the knob on the front)	8.4A (adjustable with the knob on the front)
Transfer time	10..15 ms (UPS mode) 2sec (GEN mode)		
Weight	23.5 kg	23.5 kg	23.5 kg
Dimensions	458 x 200 x 190 mm		
Protection degree	IP21	IP21	IP21
Color	RAL 9006 (White aluminum) and RAL 7016 (Anthracite grey)		
Conformity	EN60950-1, EN55022, CE marking		
Operating temperature range	-10..40°C (derating from 40 to 65°C)		
Storage temperature	-40..70°C	-40..70°C	-40..70°C
Relative humidity (operational)	0%-95%, non-condensing		
Ventilation	Forced air	Forced air	Forced air
Warranty	2 year	2 year	2 year
Battery connector	Two M6 screws	Two M6 screws	Two M6 screws
AC connectors	M4 screw terminal blocks		

## Inverter/charger combination **WP-Combi**

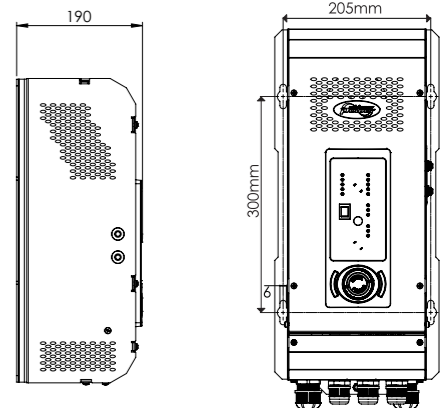


Remote Panel delivered as standard

Temperature sensor delivered as standard



Table top or wall mounting



# System inverter /chargers WPC series

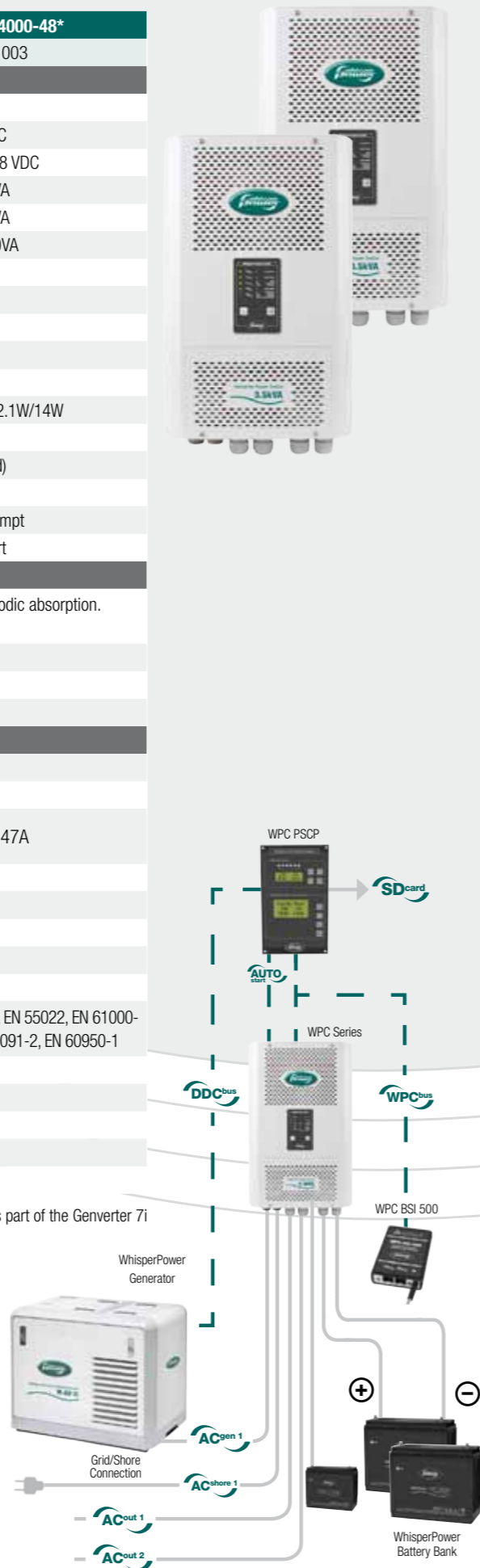
2 -20kW Power Rating - in parallel configuration

	WPC-2000-12*	WPC-3500-24*	WPC-4000-48*
Art. Nr.	60201001	60201002	60201003
TECHNICAL SPECIFICATIONS			
INVERTER			
Nominal battery voltage	12 VDC	24 VDC	48 VDC
Input voltage range	9.5 - 17 VDC	19 - 34 VDC	38 - 68 VDC
Continuous power @ 25°C	2000VA	3000VA	3500VA
Power 30 min. @ 25°C	2000VA	3500VA	4000VA
Power 5 sec. @ 25°C	6000VA	9000VA	10500VA
Maximum load	Up to short-circuit (fully protected)		
Maximum a-symmetric load	Up to continuous power		
Load detection (stand-by)	2 to 25W (AES) Automatic Enable System		
Power factor	0.1-1		
Maximum efficiency	93%	94%	96%
Consumption OFF/Stand-by/ON	1.4W/1.6W/9W	1.4W/1.6W/12W	1.8W/2.1W/14W
Output voltage	Pure sine wave 230 VAC (+/- 2%)		
Output frequency	50Hz / 60Hz (1) +/- 0.05% (crystal controlled)		
Harmonic distortion (Voltage)	<2% THD		
Overload and short-circuit protection	Automatic disconnection with 3 time restart attempt		
Overheat protection	Warning before shut-off with automatic restart		
BATTERY CHARGER			
Charge Characteristic	6-step Bulk-Absorption-Floating-Equalization-reduced floating-periodic absorption. Number of steps, thresholds, return amps completely adjustable.		
Maximum charging current	100A	90A	50A
Temperature compensation	With Whisper temperature sensor WPC-BTS		
Power Factor Correction (PFC)	EN 61000-3-2		
GENERAL DATA			
Input voltage range	184 VAC to 250 VAC		
Input frequency	45 to 65 Hz		
Input current max. (transfer relay) / Output current max.	30A / 50A	30A / 45A	30A / 47A
Transfer time	<15ms		
Weight	25 kg	28 kg	28 kg
Dimension hxxxd [mm]	510 x 330 x 150		
Protection degree	IP21		
Color	RAL 9003		
Conformity	Directive EMC 2004/108/EC : EN 61000-6-1, EN 61000-6-3, EN 55014, EN 55022, EN 61000-3-2, 62040-2. Low voltage directive 2006/95/EC : EN 62040-1-1, EN 50091-2, EN 60950-1		
Operating temperature range	-20..+40°C, derating to 55°C		
Relative humidity in operation	95% without condensation		
Ventilation	Forced from 45°C		
Acoustic level	<40dB / <45dB (without/with ventilation)		
Warranty	2 years		

\*) Designed to operate with Whisper SC & SQ diesel generators. 'Powerbox' delivered as part of the Genverter 7i

## WPC-Accessoires

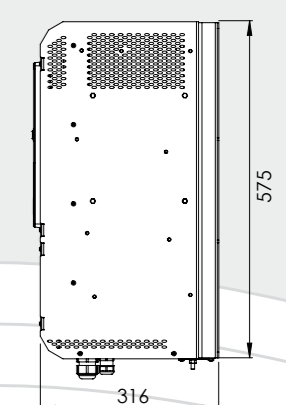
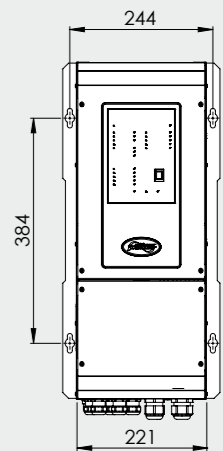
Art. Nr.	Item
60201150	WPC-PSCP Power System Control Panel
60201080	WPC-RCC Remote Combi Control
60201082	WPC-BSI 500 Battery Status Interface
60201084	WPC-RS232 Serial Interface
60201086	WPC-BTS Battery Temperature Sensor



# DC-PC WhisperPower DC PowerCube

Battery Charger/Power Supply • Power part of the GENVERTER DC-system

	WP-DC POWERCUBE 24/150	WP-DC POWERCUBE 48/100
Article nr.	60202002 / Battery charger	60202003 / Battery charger
GENERAL SPECIFICATIONS		
Nominal battery voltage	24 VDC*	48 VDC
Output current	0-150A (short circuit protected)	0-100A (short circuit protected)
Output voltage	26.5/28.5 VDC	43.0/57.0 VDC
Recommended battery capacity:	300 to 1500 Ah	200 to 1000 Ah
Charge characteristic	3+ step charge characteristic	
Slave charger	12V-20A (3+ step charge characteristic) short circuit protected	
INPUT SPECIFICATIONS		
Grid input voltage range	90-264VAC (45-65Hz), (3 wire connection)	
Grid input current	Adjustable, from 2A to 16A	
Power factor (cos phi)	> 0.9	
PM generator input range	80-300VAC (30-500Hz), (3 wire connection)	
PM input current	Adjustable, from 2A to 14.5A	
Power factor (cos phi)	> 0.85	
Power Factor Correction (PFC)	EN 61000-3-2	
TECHNICAL SPECIFICATIONS		
Temperature compensation	-30 mV/°C	-60 mV/°C
Supported battery types	Open and sealed lead acid: Gel / Traction / AGM / Spiral and Lithium-ion	
Battery leakage current	<5mA per battery	
Charge voltages	Bulk, Absorption, Float	
Charge voltage AGM / GEL at 25°C	28.80 VDC, 28.50 VDC, 27.20 VDC	57.60 VDC, 57.00 VDC, 54.40 VDC
Charge voltage Traction at 25°C	29.20 VDC, 28.90 VDC, 26.50 VDC	58.40 VDC, 57.80 VDC, 53.00 VDC
Charge voltage Open lead acid at 25°C	28.50 VDC, 28.50 VDC, 26.50 VDC	57.00 VDC, 57.00 VDC, 53.00 VDC
Charge voltage Lithium ION at 25°C	28.80 VDC, 28.60 VDC, 28.00 VDC	57.60 VDC, 57.20 VDC, 56.00 VDC
Return current from absorption to float	6% of Imax	6% of Imax
Power Cube charging status on/off	Digital output (relay, two-way contact)	
Failure condition present	Digital output (relay, two-way contact)	
DC PowerCube disabled	Digital input (potential free input, closed is disabled)	
PM input disabled	Digital input (potential free input, closed is disabled)	
Conformity	Directive EMC 2004/108/EC : EN 61000-6-1, EN 61000-6-3, EN 55014, EN 55022, EN 61000-3-2, 62040-2 Low voltage directive 2006/95/EC: EN 62040-1-1, EN 50091-2, EN 60950-1	
PROTECTIONS		
Over temperature protection	Yes, derating above 40°C, shutdown at high temperatures. (with automatic restart after cooling down)	
Overvoltage protection (manual restart needed)	36 VDC +/- 0.5 VDC	68 VDC +/- 0.5 VDC
Ingress Protection index	IP21	
MECHANICAL SPECIFICATIONS		
Main battery connection	2 x M10 studs	
Slave battery connection	1 x M5 stud	
Earth grounding lug	1 x M6 stud	
AC grid input	3 x M3 screw terminal block	
PM grid input	3 x M3 screw terminal block	
Remote control panel	RJ12	
Battery temperature sensor	RJ12	
Whisper Connect CANbus	RJ45	
Voltage sense	Phoenix MSTB 2.5/2-ST-5.08	
Digital outputs	6 x fastons (6.3x0.8)	
Digital inputs	4 x fastons (6.3x0.8)	
Dimension hxxwl [mm]	575x221x316	
Operating temperature range	-20 - 55°C (derating above 40°C)	
Relative humidity in operation	up to 95% without condensation	
Ventilation	Combined cooling (convection and forced (variable speed))	
Weight	26 kg	26 kg
Acoustic level	<52dB	
Warranty	2 years	
Accessories	Battery temperature sensor and remote control panel	



- A DC Connection to main battery
- B Second charger output
- C Programmings set points
- D Shore Power input
- E Genverter input
- F Glands for cables
- G Vario-fans

# WP-Suntrack 65A & 80A

## High yield mppt solar charge controllers

	WP-SUNTRACK 65	WP-SUNTRACK 80
Art. Nr.	60110420	60110421
TECHNICAL SPECIFICATIONS		
Nominal Battery Volage	12V / 24V / 48V	12V / 24V / 48V
Maximum Solar Power Recommended	1000W / 2000W / 4000W	1250W / 2500W / 5000W
Maximum Solar VOC	80VDC / 150VDC / 150VDC	
Maximum Solar VMP	75VDC / 145VDC / 145VDC	
ELECTRICAL CHARECTERISTICS BATTERY SIDE		
Maximum Output Current	65A	80A
Nominal Battery Voltages	Automatic or Manual set to 12 / 24 / 48VDC	
Operating Voltage Range	Above battery voltage, minimum 7V	
PERFORMANCES OF THE DEVICE		
Power Conversion Efficiency	98%	
Maximum Standby Consumption (48V)	25mA > 1.2W	
Maximum Standby Consumption (24V)	30mA > 0.8W	
Maximum Standby Consumption (12V)	35mA > 0.5W	
Battery Charge Modes	4 Stages: Bulk, Absorbtion, Float, Equalisation	
Battery temperature compensation (available with accessory BTS-01)	-3mV / °C / cell (25°C ref) default value adjustable -8 to 0mV / °C	
ELECTRONIC PROTECTION		
PV Reverse Polarity	Protected	
Battery reverse polarity	Up to -150VDC	
Battery overvoltage	Up to 150VDC	
Over temperature	Protected	
Reverse current at night	Prevented by relays	
ENVIROMENT		
Operating Ambient Temperature Range	-20°C to 55°C	
Humidity	100%	
Ingress Protection of Enclosures	IP54, IEC/EN60529:2001	
Mounting Location	Indoor	
GENERAL DATA		
Warranty	5 Years	
Weight	5.2kG	5.5kG
Dimensions h/w/l (mm)	120 / 220 / 310	120 / 220 / 350
Parallel Operation (separated PV arrays)	Up to 15 devices	
Max wire size	35mm²	
Glands	M20 x 1.5	
COMMUNICATION		
Network Cabling	WPC Communication Bus	
Remote Display and Controller	WP-RC or WP-PSCP	
Menu languages	English / French / German / Spanish	
Data Logging	With WP-RC and SD card • One point every minute	
ACCORDANCE TO STANDARDS		
CE compliant	EMC 2004/108/CE • LV 2006/95/CE • RoHS 2002/95/CE	
Safety	IEC/EN 62109-1:2010	
EMC (Electro Magnetic Compatibility)	IEC/EN 61000-6-3:2011 • IEC/EN 61000-6-1:2005	


### WP-Suntrack – product description

**Maximum power point tracking (MPPT)** is a technique that solar charge controllers, grid connected inverters and similar devices use to obtain the maximum possible power from one or more photovoltaic devices. The MPPT technique is essential to optimize the efficiency of a solar system. The WP– SUNTRACK combines an superior MPP Tracking and a perfect charge algorithm, ensuring a fast and reliable charge of the batteries. This includes multi stage, temperature compensated charging. The WP-Suntrack should be installed between the solar array and the battery. The MPPT continuously seeks out the solar generator's optimal voltage to retrieve the maximum available energy. This operating point varies constantly depending on outdoor conditions (sunlight, temperature etc.) to which it must adapt.

### Features and performances

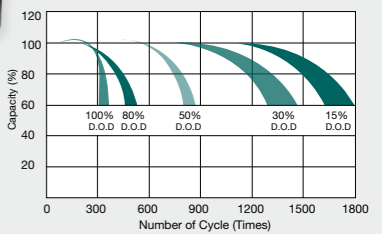
- Tracking efficiency: >99%
- Conversion efficiency: 98%
- 4 step charger for longer battery life
- 8 predefined battery charge curves as standard
- Free programming of the battery's load curve with the WPC remote panel
- Low self-consumption: <1W in night mode
- Protection against incorrect wiring
- Protection against reverse polarity
- Fully configurable
- IP54 enclosure
- Comprehensive display, programming and data logging with the WPC remote panel
- Up to 15 WP Suntrack units can be installed in parallel on the same communication bus

## Long life AGM batteries

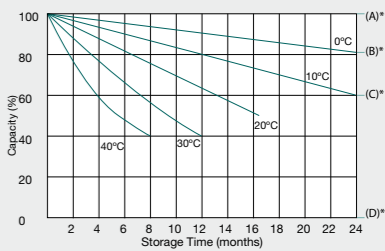
								
	AGM 55Ah	AGM 80Ah	AGM 90Ah	AGM 100Ah	AGM145Ah	AGM 165Ah	AGM 200Ah	AGM 260Ah
Article nr.	40290060	40290061	40290030	40290031	40290062	40290033	40290063	40290064
TECHNICAL SPECIFICATIONS								
Nominal capacity	55Ah	80Ah	90Ah	100Ah	145Ah	165Ah	200Ah	260Ah
C10* or C20	C10	C10	C10	C10	C10	C20	C10	C10
Nominal voltage	12.0VDC	12.0VDC	12.0VDC	12.0VDC	12.0VDC	12.0VDC	12.0VDC	12.0VDC
Type	Deep cycle Absorbed Glass Mat battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. By using strong grid and specific paste plate, gives the battery 30% more cyclic life. Applicable for marine, mobile and PV energy systems and as an engine starter battery.							
Weight +/- 10%	18.0 Kg	24.0 Kg	28.5 Kg	30.0 Kg	44.0 Kg	47.0 Kg	60.0 Kg	74.0 Kg
Dimensions l*w*h [mm] (excl. terminals)	229*138*210	350*167*180	307*169*235	328*172*222	340*173*280	483*170*240	522*240*219	520*268*220
Terminal type	M8 stainless steel							
Number of cells	6	6	6	6	6	6	6	6
CHARGE/DISCHARGE PARAMETER								
Constant voltage Charging (IU, float)	13.60 to 13.80VDC @ 25°C							
Cyclic Charging (IUU, absorption)	14.25 to 14.60VDC @ 25°C							
Recommended charging current limit (higher possible)	40 - 50% of nominal capacity							
Temperature ratio	-4mV/cell/°C	-4mV/cell/°C	-4mV/cell/°C	-4mV/cell/°C	-4mV/cell/°C	-4mV/cell/°C	-4mV/cell/°C	-4mV/cell/°C
Discharge cut off voltage	1.75VDC @ (A) <= 0.2°C • 1.70VDC @ 0.2 C (A) <= 1.0°C							
100% depth of discharge d.o.d.	1.65 VDC @ (A) >= 1.0°C							
RATED CAPACITY @ 25°C								
	RATE TO 1.75 VDC PER CELL	RATE TO 1.75 VDC PER CELL	RATE TO 1.75 VDC PER CELL	RATE TO 1.75 VDC PER CELL	RATE TO 1.80 VDC PER CELL	RATE TO 1.80 VDC PER CELL	RATE TO 1.80 VDC PER CELL	RATE TO 1.80 VDC PER CELL
20 hrs discharge	58.6Ah	85.3Ah	85.3Ah	104.0Ah	167.0Ah	165.0Ah	226.0Ah	278.0Ah
10 hrs discharge	55.0Ah	80.0Ah	80.0Ah	100.0Ah	145.0Ah	157.0Ah	200.0Ah	260.0Ah
5 hrs discharge	44.5Ah	65.0Ah	65.0Ah	89.0Ah	131.0Ah	134.0Ah	180.0Ah	220.0Ah
Peukert Coefficient	1.21<P<1.24	1.21<P<1.24	1.21<P<1.24	1.21<P<1.24	1.21<P<1.24	1.21<P<1.24	1.21<P<1.24	1.21<P<1.24
Time reserve minutes 25A discharge	92 min.	146 min.	146 min.	190 min.	305 min.	320 min.	455 min.	630 min.
Self discharge	less than 3% per month @ 25°C							
Storage time	AGM-power batteries can be stored for maximum 6 months at 25°C, Charging recommended before using.							
BATTERY PARAMETERS								
Cranking amps @ 25°C ( 5 sec)	550A	800A	900A	1000A	1450A	1650A	2000A	2600A
Cycle life at 80% of D.O.D	400	400	400	400	400	400	400	400
Internal resistance Approx.	6.0 mΩ	5.5 mΩ	5.2 mΩ	5.0 mΩ	4.5 mΩ	3.8 mΩ	4.0 mΩ	3.5 mΩ

\*) C 10 = battery capacity measured during a discharge time of 10 hrs at 5 % discharge rate.

### Life characteristics of cyclic use

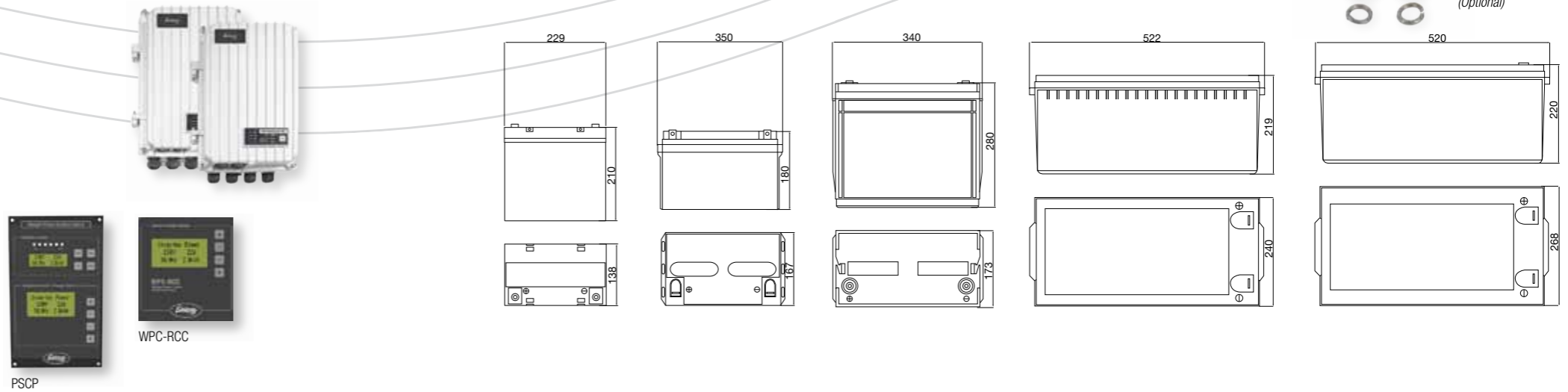
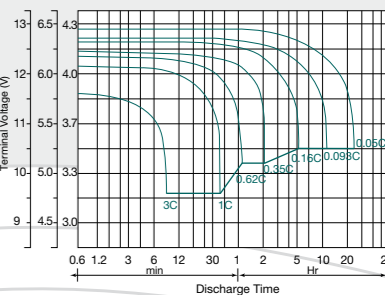


### Storage characteristics



- \*(A) Supplementary charge required  
(Carry out supplementary charge before use if 100% capacity is required)
- \*(B) Supplementary charge required before use.  
This supplementary charge will help to recover the capacity and should be made as early as possible
- \*(C) Supplementary charge may often fail to recover the capacity. The battery should never be left standing till this state is reached
- \*(D) Supplementary charge and storage guidelines

### Discharge characteristics curve

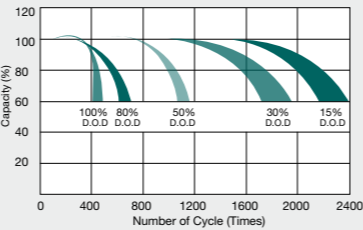


Deep cycle **GEL batteries -12V**

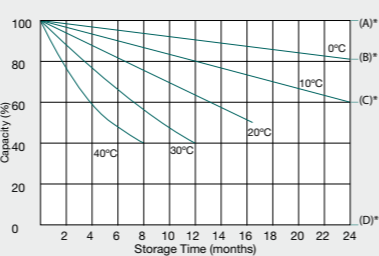


	GEL 100Ah	GE L 145Ah	GEL 180Ah	GEL 225Ah
Article nr.	40290070	40290071	40290072	40290073
TECHNICAL SPECIFICATIONS				
Nominal capacity (C20)	100Ah	145Ah	180Ah	225Ah
Nominal voltage	12.0VDC	12.0VDC	12.0VDC	12.0VDC
Type	Deep cycle GEL battery with 12 years floating design life. Superior design for frequent cyclic discharge applications under extreme temperatures. Strong grid construction to ensure reliability under frequent deep discharge use. Over 400 cycles possible at 100% DOD. Extra durable cyclic performance, high efficiency of recovery, therefore most suitable for solar, mobility, marine and deep discharge UPS installations.			
Weight +/- 10%	30.0Kg	44.0Kg	53.0Kg	65.0Kg
Dimensions l*w*h [mm] (excl. terminals)	328*172*222	340*173*280	530*209*214	522*240*219
Terminal type	M8 stainless steel	M8 stainless steel	M8 stainless steel	M8 stainless steel
Number of cells	6	6	6	6
CHARGE/DISCHARGE PARAMETERS				
Constant voltage Charging (IU, float)	13.60 to 13.80VDC @ 25°C			
Cyclic Charging (IUU, absorption)	14.25 to 14.60VDC @ 25°C			
Recommended charging current limit (higher possible)	20.0A	29.0A	36.0A	45.0A
Temperature cut-off ratio	4mv/cell/°C	4mv/cell/°C	4mv/cell/°C	4mv/cell/°C
Discharge cut off voltage	1.75 VDC @ (A) <= 0.2 C 1.70 VDC @ 0.2 C (A) <= 1.0 C			
100% depth of discharge d.o.d.	1.65 VDC @ (A) >= 1.0 C			
RATED CAPACITY @ 25°C				
	RATE TO 1.75 VDC PER CELL	RATE TO 1.75 VDC PER CELL	RATE TO 1.80 VDC PER CELL	RATE TO 1.80 VDC PER CELL
20 hrs discharge	100.0 Ah	145.0 Ah	180.0 Ah	225.0 Ah
10 hrs discharge	95.0 Ah	136.0 Ah	169.0 Ah	209.0 Ah
5 hrs discharge	84.0 Ah	117.0 Ah	146.0 Ah	181.0 Ah
Peukert Coefficient	1.21<P<1.24	1.21<P<1.24	1.21<P<1.24	1.21<P<1.24
Time reserve minutes 25 amps discharge	165 minutes	261 minutes	341 minutes	450 minutes
Self discharge	less than 3% per month @ 25°C			
Storage time	GEL-power batteries can be stored for maximum 6 months at 25°C, Charging recommended before using.			
BATTERY PARAMETERS				
Cranking amps @ 25°C ( 5 sec)	1000 A	1450A	1800A	2250A
Cycle life at 80% of D.O.D	600	600	600	600
Internal resistance Approx.	7.5 mΩ	5.0 mΩ	6.0 mΩ	4.0 mΩ

Life characteristics of cyclic use

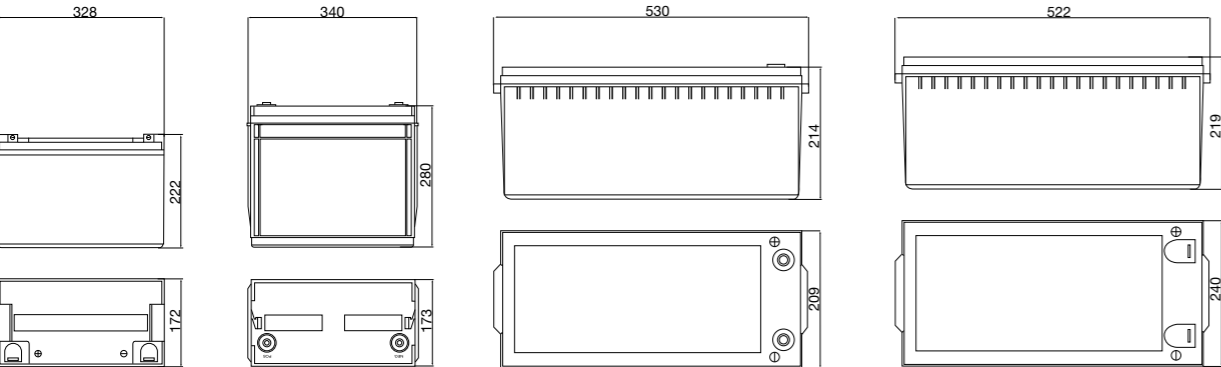
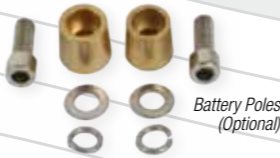
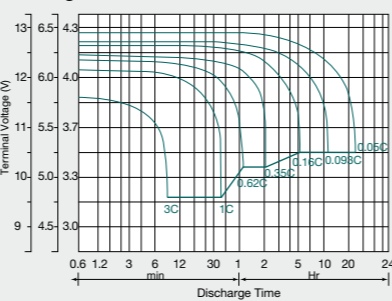


Storage characteristics



\*(A) Supplementary charge required (Carry out supplementary charge before use if 100% capacity is requires)  
\*(B) Supplementary charge required before use. This supplementary charge will help to recover the capacity and should be made as early as possible  
\*(C) Supplementary charge may often fail to recover the capacity. The battery should never be left standing till this state is reached

Discharge characteristics curve

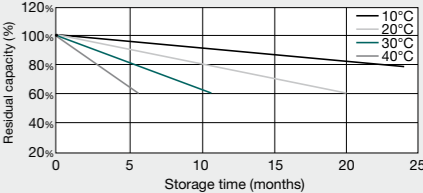


Deep cycle **GEL batteries -2VOLT**

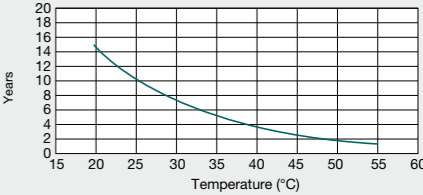


	2 VOLT GEL 750Ah	2 VOLT GEL 1000Ah	2 VOLT GEL 1250Ah	2 VOLT GEL 1500Ah	2 VOLT GEL 1650Ah
Art. Nr.	40290040	40290041	40290042	40290043	40290044
TECHNICAL SPECIFICATIONS					
Nominal capacity (C10) (1.8 V cell, 20°C)	750Ah	1000Ah	1250Ah	1500Ah	1650Ah
Nominal voltage	2VDC	2VDC	2VDC	2VDC	2VDC
Type	WhisperPower OPzV Valve Regulated batteries are extremely suitable for applications with extended charge / discharge cycles. They are fully maintenancefree. Whisper-Power GEL power batteries are based on tubular plate technology and the fixing of the electrolyte as GEL. Typical applications include reserve power supplies for backup power, marine / mobile power banks and safety power supply equipment.				
Weight +/- 10%	50.0 Kg	68.0 Kg	82.0 Kg	97.0 Kg	120.0 Kg
Dimensions l*w*h [mm] (incl. terminals)	145*206*667	191*210*668	233*210*670	275*210*669	275*210*820
Terminal type	M 10 / 2	M 10 / 4	M 10 / 4	M 10 / 4	M 10 / 4
Number of plates per cells	6	8	10	12	12
CHARGE/DISCHARGE PARAMETER					
Boost Charge Voltage (V/cell)	2.35VDC @ 20°C				
Floating voltage set point (V/cell)	2.25VDC @ 20°C				
Initial charge current (A) 0.4 C10	240A	320A	400A	480A	600A
Temperature cut-off ratio	4mv/cell/°C				
Recommended End of Discharge voltage for 10-hr rate (V/cell)	1.80 VDC/cell				
Recommended End of Discharge voltage for 1-hr rate (V/cell)	1.65 VDC/cell				
RATED CAPACITY @ 20°C	rate to 1.80 VDC per cell	rate to 1.80 VDC per cell	rate to 1.80 VDC per cell	rate to 1.80 VDC per cell	rate to 1.80 VDC per cell
10 hrs discharge	750Ah	1000Ah	1250Ah	1500Ah	1650Ah
5 hrs discharge	650Ah	865Ah	1085Ah	1305Ah	1355Ah
1 hrs discharge	314Ah	489Ah	570Ah	629Ah	647Ah
Peukert Coefficient	1.21 <P<1.23				
Time reserve minutes 25A discharge	24 hrs	32 hrs	40 hrs	48 hrs	60 hrs
Self discharge	less than 2% per month @ 20°C				
Storage time	OPzV-power batteries can be stored for maximum 6 months at 20°C, Charging recommended before using.				
BATTERY PARAMETERS					
Short circuit current of the battery cell (A)	5840A	7170A	8540A	9360A	10500A
Cycle life at 80% of D.O.D	1250	1250	1250	1250	1250
Internal resistance Approx.	0.35 mΩ	0.29 mΩ	0.24 mΩ	0.22 mΩ	0.19 mΩ

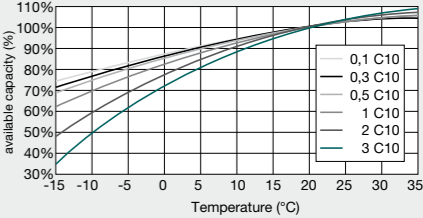
Self-discharge characteristics



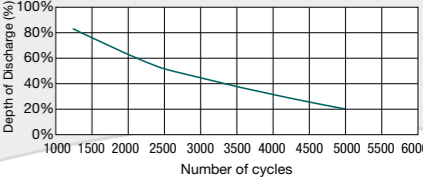
Service Life vs Temperature



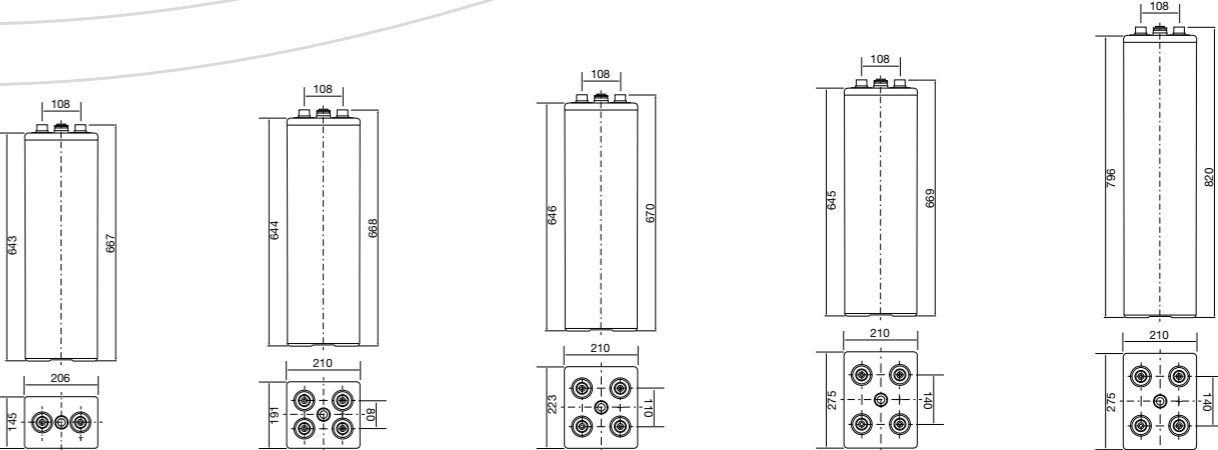
Available capacity vs. temperature



Expected Cycle-Life vs D.O.D



- 7 years warranty
- 3500 Cycles at 50% discharge
- Ah specified C10

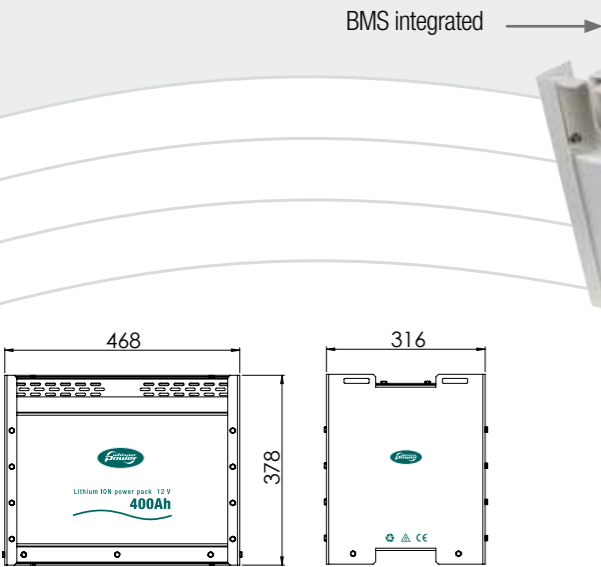


Premium batteries from small to large systems **Lithium-Ion**

Lithium-Ion batteries have the highest energy density of all batteries available on the market. In 2005, industrial quality Lithium-Ion batteries started emerging on the market, including for use in the fields of yachting and shipping. Whisper-Power's ION POWER is made from the best cells available and is supplied as a complete functional system with charger, inverter or combi and protection accessories. We supply the complete required capacity (12 or 24VDC) in either one or two enclosures, including the BMS (cell balancing) electronics. Remember, it is not possible to simply use lithium-Ion batteries on their own as it is the additional electronics and protection circuitry which renders them functional.

Features & Benefits

- Highest energy density.
- Longest duration of life (> 10 yrs, normal conditions).
- Space saving up to 70% compared with GEL/ AGM.
- 30 - 40% weight reduction.
- Longe cycle life - appr 4000 cycles (max 50% discharge).
- Fast charging in combination with high DC discharging;
- 90% of nominal capacity can be charged back.
- High surge capability.
- Short generator running time, as result (fuel saving).
- DC voltage up to 750 VDC configurable (hybrid propulsion)
- 7 years warranty (pro rata)



Available configurations

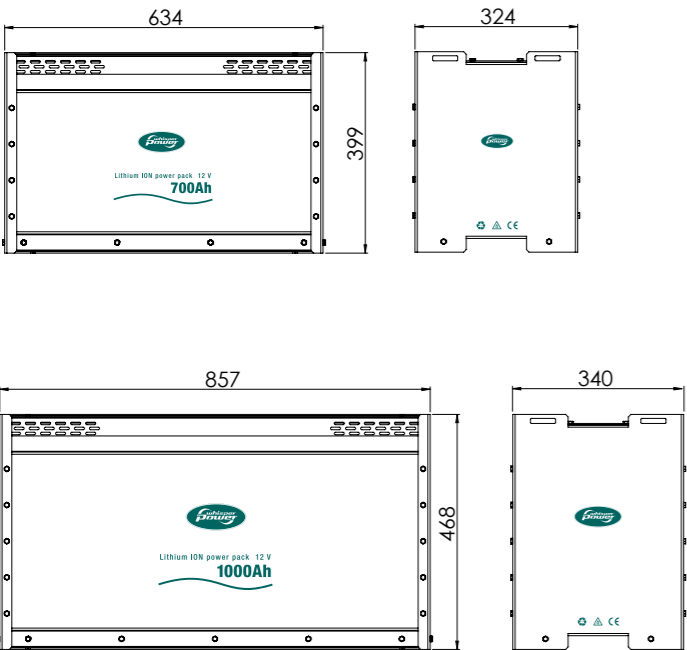
- Models: 12/160 Ah - 12/200 Ah    12/400 Ah - 12 /700 Ah - 12/1000 Ah
- 24/160 Ah - 24/200 Ah - 24/400 Ah 24/700 Ah - 24/1000 Ah
- 48/200 Ah - 48/400 Ah - 48/700 Ah 48/1000 Ah
- High DC systems at request

General specifications

Technology → Lithium-Ion LiFe PO4  
Cell voltage → 3.2 VDC/ each cell  
Battery Manag. System - cell balancing → Integrated inside the enclosure  
Capacity in Ah → Discharge rate 1 -20 hours  
Battery monitoring → Integrated  
Battery low voltage disconnect → Externally

Battery charging by

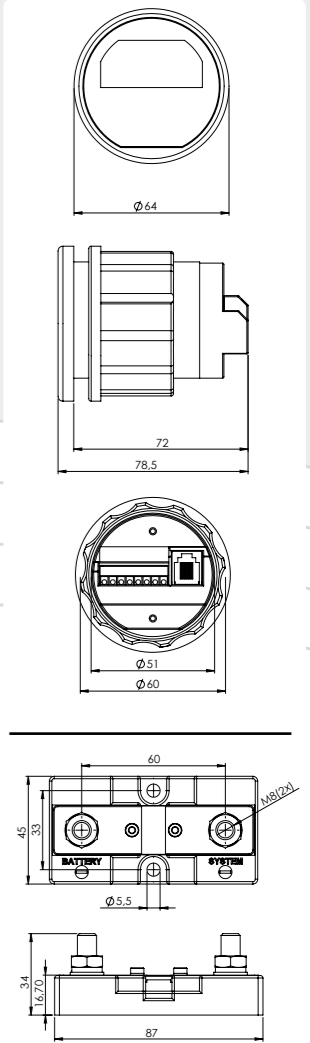
- DC PowerCube
- WPC Power Centre
- WP Combi
- Supreme battery charger
- DC Beltpower with ACR
- Suntrack solar charge controller



Technical specifications **WBM - Battery Monitors**

	WBM-BASIC	WBM-PRO	WBM-PRO HV
Art. Nr.	40290310	40290311	40290312
TECHNICAL SPECIFICATIONS			
Supply voltage range	9..35 VDC	9..35 VDC	14..70 VDC
Supply current <sup>1)</sup> : @Vin=24VDC	7 mA	7 mA	5 mA (@Vin=48VDC)
@Vin=12VDC	9 mA	9 mA	6 mA (@Vin=36VDC)
Input voltage range (auxiliary battery)	2..35 VDC	2..35 VDC	2..35 VDC
Input voltage range (main battery)	0..35 VDC	0..35 VDC	0..70 VDC
Input current range <sup>2)</sup>	-999..+999A	-999..+999A	-999..+999A
Battery capacity range	20..999 Ah	20..999 Ah	20..999 Ah
Operating temperature range	-20..+50°C	-20..+50°C	-20..+50°C
Readout resolution : voltage	± 0.1V (0..35V)	± 0.1V (0..35V)	± 0.01V (0..70V)
current	± 0.1A (0..100A)	± 0.1A (0..200A)	± 0.1A (0..200A)
current	± 1A (100..999A)	± 1A (200..999A)	± 1A (200..999A)
capacity range	± 0.1Ah (0..100Ah)	± 0.1Ah (0..200Ah)	± 0.1Ah (0..200Ah)
capacity range	± 1Ah (100..999Ah)	± 1Ah (200..999Ah)	± 1Ah (200..999Ah)
state-of-charge (0..100%)	± 0.1%	± 0.1%	± 0.1%
time remaining (0..24hrs)		± 1 mn	± 1 mn
time remaining (24..240hrs)		± 1 hr	± 1 hr
temperature (-20..+50°C) <sup>3)</sup>		± 0.5°C	± 0.5°C
Voltage measurement accuracy	± 0.3%	± 0.3%	± 0.3%
Current measurement accuracy	± 0.4%	± 0.4%	± 0.4%
Material of housing	ABS	ABS	ABS
Color	RAL 7021 black/ grey	RAL 7021 black/ grey	RAL 7021 black/ grey
Dimensions :			
frontpanel / body diameter	ø 64 mm / ø 52 mm	ø 64 mm / ø 52 mm	ø 64 mm / ø 52 mm
total depth / weight	79 mm / 95 gr	79 mm / 95 gr	79 mm / 95 gr
Shunt dimensions :			
footprint	45 x 87 mm	45 x 87 mm	45 x 87 mm
height	17 mm (base) / 35 mm	17 mm (base) / 35 mm	17 mm (base) / 35 mm
	(high current fasteners)	(high current fasteners)	(high current fasteners)
weight	145 gr	145 gr	145 gr
Protection class	IP20 (frontpanel only IP65)	IP20 (frontpanel only IP65)	IP20 (frontpanel only IP65)

<sup>1)</sup> Measured with backlight and alarm relay turned off. <sup>2)</sup> Depends on selected shunt. With standard delivered 500A/50mV shunt (350A continuous), the range is limited to -600..+600A. <sup>3)</sup> Only available when optional temperature sensor is connected.



## DC-DC converters • MC series



Model DC/DC	MC 24/12-30	MC 24/12-20	MC 24/12-12	MC 24/12-08	MC 12/24-10
Article nr.	60110012	60110011	60110016	60110010	60110017
TECHNICAL SPECIFICATIONS					
Converter type	step down and voltage stabilizing				step up an voltage stabilizing
INPUT					
Nominal input voltage	24VDC	24VDC	24VDC	24VDC	12VDC
Input range, full output specifications	18..35VDC	18..35VDC	18..35VDC	18..35VDC	9..18VDC
Input range, no defects	0..35VDC	0..35VDC	0..35VDC	0..35VDC	0..18VDC
OUTPUT					
Nominal output voltage	13.8VDC	13.8VDC	13.8VDC	13.8VDC	25.0VDC
Voltage adjustment	none	none	none	none	none
Output accuracy	1%	1%	3%	3%	3%
Output voltage ripple, peakpeak	1%	1%	1%	1%	3%
Maximum output power	490W	350W	170W	110W	300W
Continue output power	420W	280W	170W	110W	250W
Maximum output current	35A	25A	12A	8A	12A
Continue output current at 40°C	30A	20A	12A	8A	10A
GENERAL					
Efficiency	>92%	>92%	>92%	>92%	>93%
No load consumption	<25mA	<25mA	<5mA	<5mA	<5mA
Ambient operating temperature	-10°C .. +40°C	-10°C .. +40°C	-10°C .. +40°C	-10°C .. +40°C	-10°C .. +40°C
Storage temperature	-25°C .. +85°C	-25°C .. +85°C	-25°C .. +85°C	-25°C .. +85°C	-25°C .. +85°C
Operating humidity	95% max, non-condensing		95%, non-condens	95%, non-condens	95%, non-condens
Galvanic insulation	Common negative	Common negative	Common negative	Common negative	Common negative
Cooling concept	Forced ventilation	Natural convection	Natural convection	Natural convection	Natural convection
PROTECTIONS					
Overcurrent / short circuit	limited by current sensing		Yes / Fuse	Yes / Fuse	Yes / Fuse
Over heat, shutdown	limited power by temperaturesens		None	None	None
MECHANICAL					
Connections input/output, Faston max wire	6mm^2	6mm^2	6mm^2	6mm^2	6mm^2
Enclosure Dimensions (HxWxD)	50x151x88mm	50x126x88	50x98x88	50x98x88	50x126x88
Mounting holes footprint	dia 4 mm 58x143	dia 4 mm 58x118	dia 4 mm 58x90	dia 4 mm 58x90	dia 4 mm 58x118
Weight	500 gr	440 gr	290gr	270 gr	360 gr
Protection class	IP20	IP20	IP20	IP20	IP20
Enclosure no.	frame 6	frame 5	frame 4	frame 4	frame 5
Enclosure Material	Anodized alu, ABS end covers		Alu / ABS	Alu / ABS	Alu / ABS
Enclosure Colour	Black RAL 9011	Black RAL 9011	Black RAL 9011	Black RAL 9011	Black RAL 9011

### FEATURES

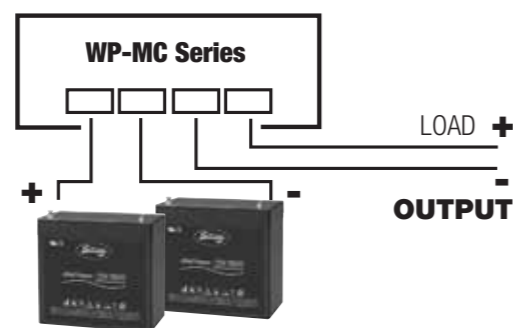
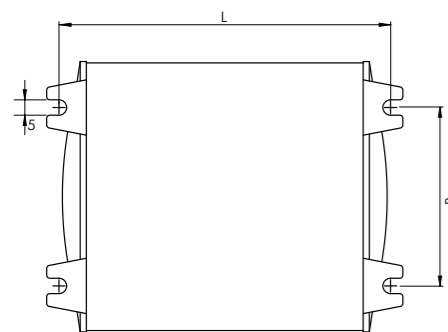
- 24V input, 12V output step down conversion, for use of your 12V equipment on 24V batteries.
- Common ground versions
- Excellent voltage stabilization, ensuring safe use of the appliances
- Compact and high efficient energy saving technology

### ADDITIONAL MODELS:

Capability to charge the secondary battery (GEL AGM, wet)

Comply to the following standards

EN61000-6-3 (EN55022), EN61000-6-2 (EN61000-2/3/4, EN61000-4-3),  
LVD 73/23/EEC (EN60335-1), e4-95/54/EC, RoHS 2002/95/EC  
Note: the given specifications are subject to change without notice.



Read about our  
DC-DC MCC go to  
[whisperpower.com](http://whisperpower.com)



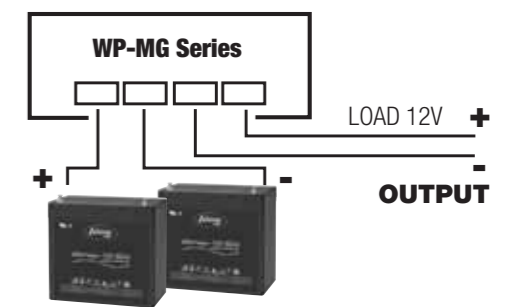
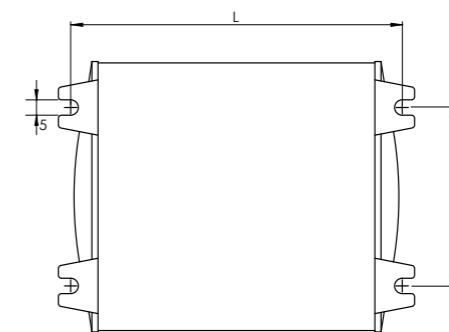
## DC-DC converters • MG series • full Galvanic Isolation input/output



Model DC/DC	MG 24/12-30-I	MG 24/12-16-I	MG 48/12-30-I	MG 48/12-08-I	MG 24/24-15-I
Article nr.	60110021	60110020	60110023	60110024	60110025
TECHNICAL SPECIFICATIONS					
Converter type	step down and voltage stabilizing				step up an voltage stabilizing
INPUT					
Nominal input voltage	24VDC	24VDC	48VDC	48VDC	24VDC
Input range, full output specifications	20..35VDC	20..35VDC	30..60VDC	30..60VDC	20..35VDC
Input range, no defects	0..35VDC	0..35VDC	0..70VDC	0..70VDC	0..35VDC
OUTPUT					
Nominal output voltage	12.5VDC	12.5VDC	12.5VDC	12.5VDC	24.5VDC
Voltage adjustment	yes	yes	yes	yes	yes
Output accuracy	3%	3%	3%	3%	3%
Output voltage ripple, peakpeak	1%	1%	1%	1%	1%
Maximum output power	400W	200W	400W	200W	400W
Continue output power	360W	200W	360W	100W	360W
Maximum output current	32A	16A	32A	16A	16A
Continue output current at 40°C	30A	16A	30A	8A	15A
GENERAL					
Efficiency	>87%	>87%	>87%	>87%	>87%
No load consumption	<25mA	<25mA	<25mA	<25mA	<25mA
Ambient operating temperature	-10°C .. +40°C	-10°C .. +40°C	-10°C .. +40°C	-10°C .. +40°C	-10°C .. +40°C
Storage temperature	-25°C .. +85°C	-25°C .. +85°C	-25°C .. +85°C	-25°C .. +85°C	-25°C .. +85°C
Operating humidity	95%, non-condens	95%, non-condens	95%, non-condens	95%, non-condens	95%, non-condens
Galvanic insulation	YES, 500 VAC	YES, 500 VAC	YES, 500 VAC	YES, 500 VAC	YES, 500 VAC
Cooling concept	Forced ventilation	Forced ventilation	Forced ventilation	Forced ventilation	Forced ventilation
PROTECTIONS					
Overcurrent / short circuit	limited by current sensing				
Over heat, shutdown	limited power by temperature sensing				
MECHANICAL					
Connections input/output, Faston max wire	6mm²	6mm²	6mm²	6mm²	6mm²
Enclosure Dimensions (HxWxD)	83x186x133	50x176x88	83x186x133	50x151x88	83x186x133
Mounting holes footprint	dia 4 mm 91x177	dia 4 mm 58X168	dia 4 mm91x177	dia 4 mm 58X143	dia 4 mm91x177
Weight	1,4 kg	630 gr	1,4 kg	630 gr	1,4 kg
Protection class	IP20	IP20	IP20	IP20	IP20
Enclosure no.	frame 8	frame 7	frame 8	frame 6	frame 8
Enclosure Material	Anodized aluminium, ABS end covers				
Enclosure Colour	RAL 9006	Black, RAL 9011	RAL 9006	Black, RAL 9011	RAL 9006

Comply to the following standards

EN61000-6-3 (EN55022), EN61000-6-2 (EN61000-2/3/4, EN61000-4-3),  
LVD 73/23/EEC (EN60335-1), e4-95/54/EC, RoHS 2002/95/EC  
Note: the given specifications are subject to change without notice.



## Power Generation

# Why WhisperPower's diesel generators are so unique

WHISPERPOWER's Genverter range of diesel generators are the key to ensure solar/ wind based power systems are providing ALWAYS power, without interruption. Our Genverter technology is designed to MINIMISE the running time and to REDUCE fuel and maintenance costs substantially. Read more at the next pages.

WhisperPower's GENVERTER diesel generators are the latest state of the art smart, clean and silent diesel generators, incorporating:

- Variable/ programmable speed technology, diesel engine adapts to the load demand
- PM Permanent Magnet technology, also applied in hybrid cars, wind generators etc. They are highly efficient (95%), offering the best fuel-to-power ratio.
- Fly wheel integrated power generation – for smallest configuration
- Inverter and Genverter are ONE – fully integrated product, with parallel operation features to periodically produce more power by peak-shaving
- DC PowerCube high power charger operates directly from Genverter's fly wheel generator. No losses here and shortest engine operating time.
- Full integration of all parts into Grid Independence concept, including cooling/ heating (combined heat and power features)

## 8 models to choose from:

### AC Versions

Genverter/1 AC output (230 V 50/ 60 Hz) – 3.6 kVA

Genverter/2 AC output (230 V/ 50 Hz or 120 V 60 Hz) – 6 kW

Genverter/3 AC output (230 V/ 50 Hz or 120 V 60 Hz) – 8 kW

Genverter/3 AC output (230 V/50 Hz or 120 V 60 Hz) – 10 kW

### DC Versions

Genverter/1 DC output 24 V 80 A/ 48 V/ 40 A

Genverter/2 DC output 24 V 150 A/ 48 V 80 A

Genverter/3 DC output 24 V 300 A/ 48 V 150 A

Genverter/3 DC output 24 V 400 A/ 48 V 200 A

**AUDIBLE NOISE FROM 46 DBA on**



# The Concept Diesel Generator Genverter

## Genverter power systems

Genverter Marine/ Mobile/ Domestic diesel systems combine inverter/ battery and engine techniques, offering many benefits such as drastic fuel consumption, noise and size & weight reduction. Power ratings from 3.6kVA - 350kW. Output voltage configurations: 230VAC 50Hz / 120VAC 60Hz, 12-24-48VDC, 500-750VDC. At this page we highlight our 2 cylinder DC version: DC PowerCube operating with the super silent Kubota based 2 cylinder variable speed diesel generator.

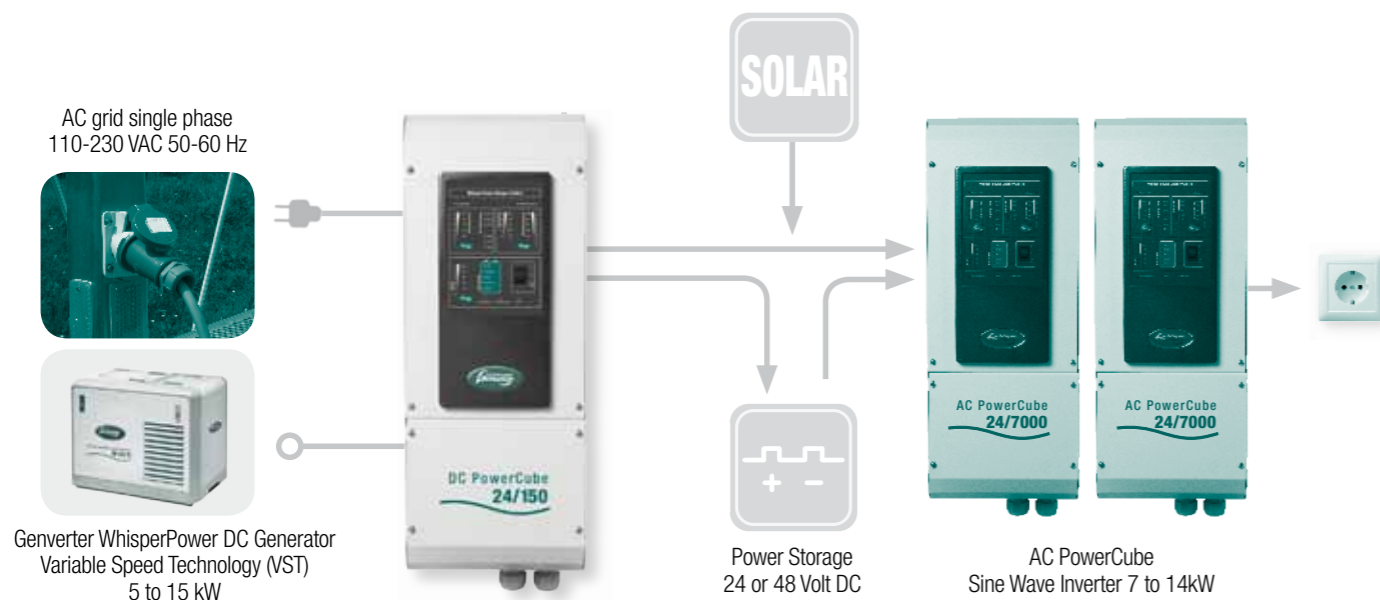


Bearing at the back of the PM alternator

Permanent Magnet high efficiency alternator, water-cooled, connected to the cooling circuit of the engine

Inner rotor, clearly visible is the back bearing

Kubota 2 cylinder diesel engine, we supply on demand versions based on Mitsubishi engines



# Ask for our extended genverter/ generator catalogue Brief specifications

## W-GV/1 - 4 BASIC • 230V - PM TECHNOLOGY

Art nr 41002000

### SPECIFICATIONS

System output continuous	3.6kW at max rpm
Output voltage / frequency	230V / 50Hz
Revolutions rpm	2500 – 3400 rpm
Engine	WP 1 - 12 cylinder, liquid cooled by radiator

### DIMENSIONS & WEIGHT

Length	630 mm
Width	480 mm
Height	520 mm
Dry weight	92 kg



GV/1 - 4 Basic

## W-GV/2 - 8 BASIC • 2 CYL. 230V / 8KVA / 50HZ - PM TECHNOLOGY

Art nr 41005020

### MAIN SPECIFICATIONS

System output continuous	6kW at 2800 rpm
Max current AC	65A
Output voltage / frequency	230V / 50Hz
Harmonic distortion	< 5%

### ALTERNATOR SPECIFICATIONS

Type	Permanent Magnet Alternator (PM)
RPM range	1500-2800 rpm
Efficiency	94%

### DIMENSIONS & WEIGHT

Length	690 mm
Width	550 mm
Height	580 mm
Dry weight	160 kg



GV/2 - 8 Basic

## W-GV/3 - 10 BASIC • 230V / 50Hz - PM TECHNOLOGY

### MAIN SPECIFICATIONS

System output continuous	8kW at 2800 rpm
Max current AC	65A
Output voltage / frequency	230 V/ 50 Hz

### ALTERNATOR SPECIFICATIONS

Type	Permanent Magnet Alternator (PM)
RPM range	1500-2800 rpm
Efficiency	94%

### DIMENSIONS & WEIGHT

Length	721 mm
Width	544 mm
Height	599 mm
Weight	180 kg



GV/3 - 10 Basic

## WP-CS5C 75/80/85M • All-purpose solar module • on-grid / off-grid use

Electrical Data			
	WP-CS5C-75M	WP-CS5C-80M	WP-CS5C-85M
Nominal Maximum Power at STC (Pmax)	75W	80W	85W
Optimum Operating Voltage (Vmp)	17.5V	17.6V	17.8V
Optimum Operating Current (Imp)	4.29A	4.55A	4.78A
Open Circuit Voltage (Voc)	21.7V	21.9V	22.1V
Short Circuit Current (Isc)	4.69A	4.91A	5.12A
Operating Temperature	-0.40°C~+85°C		
Maximum System Voltage	1,000V(IEC)/600V(UL)		
Maximum Series Fuse Rating	10A		
Power Tolerance	±5W		
TEMPERATURE COEFFICIENT	Pmax	-0.45%/°C	
	Voc	-0.35%/°C	
	Isc	0.060%/°C	
	NOCT	45°C	

Under Standard Test Conditions (STC) of irradiance of 1000W/m<sup>2</sup>, spectrum AM 1.5 and cell temperature of 25°C

Mechanical Data	
Cell Type	Mono-crystalline
Cell Arrangement	36(4*9)
Dimensions	1213x547x35mm(47.8x21.5x1.4 in)
Weight	8.0kg(17.6lbs)
Front Cover	Tempered glass
Frame Material	Anodized aluminum alloy
Standard packaging (Modules per Pallet)	24/48pcs

### All-purpose

WP-CS5C is a robust all purpose solar module with 36 solar cells. These modules can be used for off-grid solar applications. The meticulous design and production techniques ensure a high-yield, long-term performance for every module produced. The rigorous quality control and in-house testing facilities guarantee these modules meet the highest quality standards possible. Manufactured for WhisperPower by Canadian Solar.

### Applications

- Power supply for remote telecommunication equipment
- Traffic, security environment, and other remote monitoring and signaling systems
- Water pumping systems
- Rural area applications
- Other off-grid applications

### Quality Certificates

- IEC61215, IEC61730, UL1703, CE
- ISO9001:2008: Standards for quality management systems
- ISO/TS16949:2009: The automotive quality management system

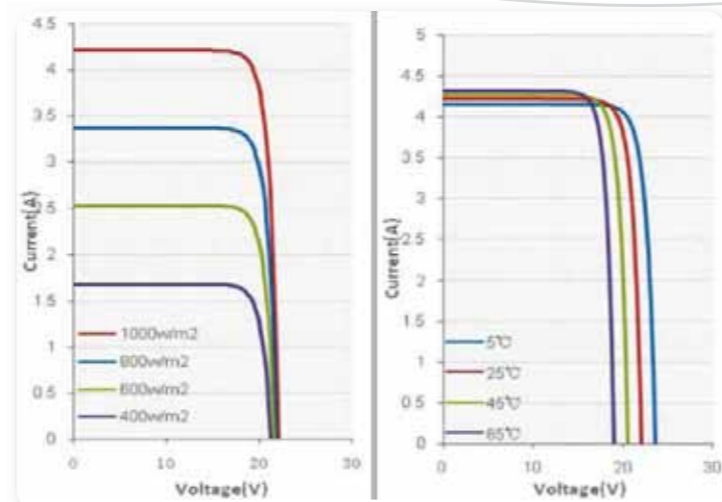
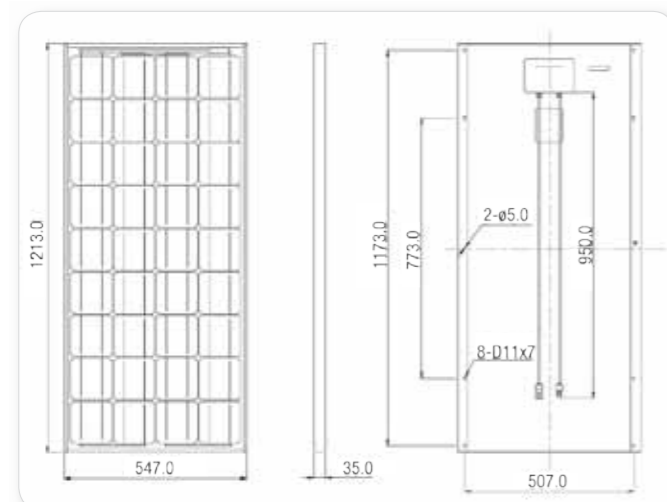
### Environment Certificates

- ISO14001: 2004: Standards for Environmental management systems
- QC080000 HSPM: The Certification for Hazardous Substances Regulations



Engineering Drawings

I-V Curves



## WP-CS6C 100/110/120/130 • All-purpose solar module • on-grid / off-grid use

Electrical Data				
	WP-CS6C-100	WP-CS6C-110	WP-CS6C-120	WP-CS6C-130
Nominal Maximum Power at STC (Pmax)	100W	110W	120W	130W
Optimum Operating Voltage (Vmp)	17.3V	17.3V	17.3V	17.5V
Optimum Operating Current (Imp)	5.79A	6.36A	6.92A	7.43A
Open Circuit Voltage (Voc)	21.5V	21.6V	21.7V	22V
Short Circuit Current (Isc)	6.46A	7.01A	7.52A	7.96A
Operating Temperature	-0.40°C~+85°C			
Maximum System Voltage	1,000V(IEC)/600V(UL)			
Maximum Series Fuse Rating	15A			
Power Tolerance	±5W			
TEMPERATURE COEFFICIENT	Pmax	-0.45%/°C		
	Voc	-0.35%/°C		
	Isc	0.060%/°C		
	NOCT	45°C		

Under Standard Test Conditions (STC) of irradiance of 1000W/m<sup>2</sup>, spectrum AM 1.5 and cell temperature of 25°C

Mechanical Data	
Cell Type	Poly-crystalline / Mono-crystalline
Cell Arrangement	36(4*9)
Dimensions	1485x666x40mm(58.4x26.2x1.57 in)
Weight	12.0kg(26.5lbs)
Front Cover	Tempered glass
Frame Material	Anodized aluminum alloy
Standard packaging (Modules per Pallet)	20pcs

### All-purpose

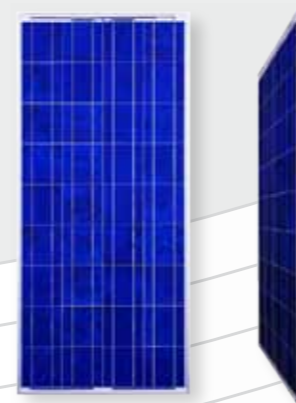
WP-CS6C is a robust all purpose solar module with 36 solar cells. These modules can be used for on- grid and off-grid solar applications. The meticulous design and production techniques ensure a high-yield, long-term performance for every module produced. The rigorous quality control and in-house testing facilities guarantee these modules meet the highest quality standards possible. Manufactured for WhisperPower by Canadian Solar.

### Applications

- Residential roof-top systems
- Commercial/industrial building roof-top systems
- Large on-grid and off-grid solar power stations
- Rural area applications
- Other on-grid and off-grid applications

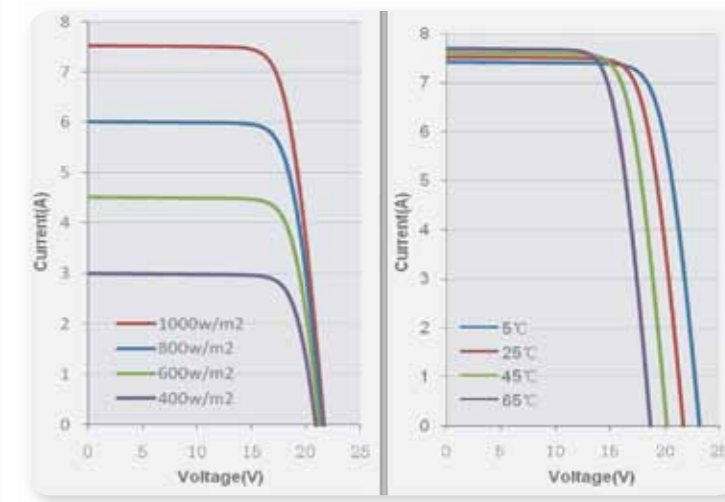
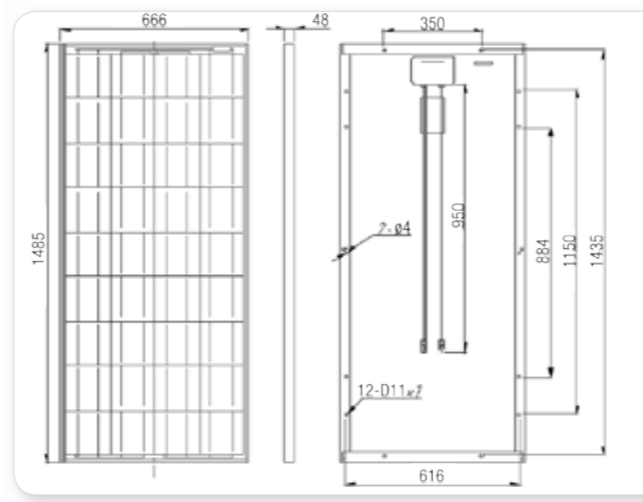
### Quality Certificates

- IEC61215, IEC61730, UL1703, CE
- ISO9001:2000: Standards for quality management systems
- ISO/TS16949:2002: The automotive quality management system
- QC080000 HSPM: The Certification for Hazardous Substances Regulations



Engineering Drawings

I-V Curves



## Solar panels and accessories

# Balance of system components

WhisperPower has strong links with leading solar module manufacturers in the world and their distribution partners. As a result, we are able to offer all essential solar system components for a very good price. This ability completes our one-stop-shop and system concept. Below we have summarized our product offering, sourced from manufacturers supplying premium quality for an affordable price.



628.000 kWp grid connected solar system,  
for chicken farm in Zeewolde, the Netherlands.  
Supplier: Libra Energy • Installation by van Ommeren Installatietechniek

### Solar modules

Our main European supplier is Solsonica, the benchmark setter in the Italian solar power market. Solsonica's 140MW TUV certified production capacity, allows efficient service and prompt reaction to market demands. Solsonica commitment to quality starts with selection of the best suppliers and continues with high degree of automation and stringent controls throughout all the production process. Another important brand we have taken on is Canadian, one of the leaders in the world.

### Grid connected inverters

In this somewhat overcrowded business field, we have selected the best and most complete suppliers, offering 'all the bells and whistles' without charging plus prices, and a sound service and warranty policy. We are able to supply power ratings from 500 Wp up to 50kVA. With these grid connected inverters we are able to connect our 'island systems' to the grid, if desired.

### Solar mounting systems

We are offering a wide selection of mounting systems, for flat roofs, roof integration, field mounting, off-shore mounting, etc. See next page.



**Libra**  
ENERGY  
balance in power

Ask for the **Libra Energy catalogue**  
on [www.libra-energy.eu](http://www.libra-energy.eu)

## Solar

# All you need for a complete top class installation

A solar panel (also solar module, photovoltaic module or photovoltaic panel) is a packaged, connected assembly of solar cells, also known as photovoltaic cells. The solar panel can be used as a component of a larger photovoltaic system to generate and supply electricity in commercial and residential applications. Because a single solar panel can produce only a limited amount of power, many installations contain several panels. A photovoltaic system typically includes an array of solar panels, an inverter, and interconnection wiring. Mounting systems are needed to install the Pv-modules on a roof or in the field. WhisperPower & Libra Energy are your one-stop-stop for the entire Balance of System Components. Below we describe some of the main components we include in our system offering.

### A - Class Solar Modules Canadian Solar CS6P-250P

The CS6P-250P solar panel is a robust module consists of 60 cells. These modules are ideal for use in grid-connected PV applications. The Canadian Solar CS6P-250P has a power of 250 Watts Peak. This kind of module is polycrystalline, which means that the cells are mutually different. This results in a higher energy yield under different irradiation angles. Polycrystalline modules are less expensive to manufacture compared with mono crystalline modules. The modules of Canadian Solar have passed the ammonia test and salt mist test and is certified by TÜV-Rheinland.

#### Applications

- Grid-connected and autonomous (off-grid) systems
- Residential roofing
- Commercial / industrial roofs such as; logistics centers, chain stores, barns, etc.
- Autonomous (off-grid); rigs, campers, caravans, ships and yachts, solar parks
- Other locations where no grid is available
- 10 year product warranty on materials and craftsmanship
- 25 year linear performance guarantee

#### Quality Certificates

- IEC 61215, IEC 61730, UL 1703CE
- ISO9001:2008: Standard for quality management
- ISO/TS16949:2009: Quality Management system to the automotive industry



### Sustainability Certificates

- ISO14001:2004; Standards for environmental management systems
- QC080000 HSPM; Certificate regarding regulating hazardous substances
- OHSAS 18001:2007 International standards of health and workplace safety

### Canadian Solar CS6P-250M All Black

All-black CS6P is a robust solar module with 60 solar cells. These modules can be used for on-grid solar applications. The all-black modules use high efficiency mono-crystalline silicon cells, laminated with black back sheet and framed with black anodized aluminum. The all-black modules are the perfect choice of customers who not only are keen on using solar energy, but also look for aesthetic value.

#### Key Features

- Highly bankable modules
- Aesthetic all-black appearance
- 10 years product warranty (materials and workmanship); 25 years module power output warranty
- Industry leading plus power tolerance: +5W (+2.1%)
- Strong framed module, passing mechanical load test of 5400Pa to withstand heavier snow load
- The 1st manufacturer in PV industry certified for ISO:TS16949 (The automotive quality management system) in module production since 2003
- ISO17025 qualified manufacturer, own testing lab, fully complying to IEC, TUV, UL testing standards



## Mounting systems

We offer a number of techniques and brands. Clenergy's PV-ezRack SolarRoof Pro is a roof-mounting solution suitable for most types of pitched and flat roofs. Using our innovative PV-ezRack Rail, Z-modules and roof hooks, PV-ezRack SolarRoof Pro is one of the most versatile rooftop solutions in the world, delivering a safe and cost-effective solution to installers.

#### Key Features

- Easy Installation; the versatile rail, Z-module and splice kit eliminates make SolarRoof a safe and cost effective PV mounting system.
- Versatile Application; with a full range of roof hooks, PV-ezRack SolarRoof Pro is suitable for most roofing types, including pitched tile roofs, metal roofs, concrete roofs and even slate roofs.
- Great Compatibility; designed as a universal PV mounting system, SolarRoof Pro is compatible with most of the major framed and frameless PV modules on the market.
- High Quality; strict quality control over materials and finished products ensures optimum strength and long life for your installation.
- 10 Year Warranty

Another partner is Van der Valk. A Dutch company specializing in green house constructions and PV mounting systems. With the ValkBox, Van der

Valk Solar Systems has developed a solar-mounting system which puts comfort first. Logistical simplicity, simplicity in ordering and easy to design and mount for installers. The ValkBox is suitable for use on residential roofs and for use in small commercial on roof systems. There are three versions. For pitched roofs there are the ValkBox 1-Base set and the ValkBox 2-Extension set and for flat roofs there is the ValkBox 3-Universal set. The ValkBox offers an enormous logistical advantage. Installers only need to keep three products in stock. You have the right materials for almost any kind of system easily within reach.

#### The ValkBox 3 for flat roofs

- The ValkBox 3-Universal set contains all of the mounting materials required to install one solar panel (landscape) on a flat roof. Incl.
- 2 aluminum A-frames with a tilt angle of
- 20 degrees (anodized for a long lifespan) and
- 4 special rubber tile supports for optimal pressure distribution.

The ValkBox 3 is intended to mount all modules individually (also the ballast is calculated in that way. There is no need to interconnect any parts when the system is extended. A clever hinge system makes it possible to lift the panel, so it is easy to place ballast tiles (300 x 300 mm). To calculate the correct ballasting, a clear ballast table with regional wind and building height variables is included.

#### ASK FOR THE COMPREHENSIVE LIBRA ENERGY CATALOGUE

### Quality Certificates

- IEC 61215, IEC 61730, UL 1703CE
- ISO9001:2008: Standards for quality management systems
- ISO/TS16949:2009: The automotive quality management system

### Environmental Certificates

- ISO14001:2004: Standards for Environmental management system
- QC080000 HSPM: The Certification for Hazardous Substances Regulations
- OHSAS 18001:2007 International standards for occupational health and safety

#### Key Features

- Highly bankable modules
- Aesthetic all-black appearance
- 10 years product warranty (materials and workmanship); 25 years module power output warranty
- Industry leading plus power tolerance: +5W (+2.1%)
- Strong framed module, passing mechanical load test of 5400Pa to withstand heavier snow load
- The 1st manufacturer in PV industry certified for ISO:TS16949 (The automotive quality management system) in module production since 2003
- ISO17025 qualified manufacturer, own testing lab, fully complying to IEC, TUV, UL testing standards



Wooden bars inserted on the roof with hangerbolts for mounting frame support

All Black 250 Wp modules installed on the roof of an Independent Home.



Delivered anywhere, at any time

# WhisperPower Service & Support

WhisperPower's service and support goes way beyond production and sales. We remain responsible for our products, systems and accessories, providing all necessary service and support before, during and after your purchase. This ranges from system recommendations and installation to first class service for maintenance and repairs.



## Bespoke system advice

Our engineers and advisors have a wealth of experience in the development and realisation of electrical power systems and are always available to help you plan your own. This includes installing a genset or genverter and more complex systems. Our designers will ensure the ideal set-up and a system with optimal efficiency, even when combining your generator system with fuel cells or solar or wind generator power.

## Global sales & distribution network

The growing network of WhisperPower dealers and distributors covers the world. Our international brand is locally represented by companies including bodywork manufacturers, shipyards,

electrical and mechanical contractors and sector specific companies. Their trained specialists and professionals are available for servicing mobile, marine or domestic applications.

## Commissioning and system set-up

Whenever possible, WhisperPower's technical team will take care of commissioning of your power system as soon as it is delivered. In several countries this service is included in our product offering. This ensures that your system is installed in accordance with the right guidelines and conditions. Contact us for more information about the terms and conditions.

## Our starting point: On-site service

The representatives in our network will provide you with service and technical support in case of repairs or malfunctions.

Where possible they will help you on site, wherever you may be in the world.

## 24/7 Hotline for Service & Support

Our technical service is available in case of malfunctions or repairs. Contact us directly 24/7 from anywhere in the world via the international WhisperPower Hotline Service & Support line on +31 512 571 555. We will provide support ourselves where possible, or put you in contact with our local representative.

## Periodical training: Up-to-date expertise

Expertise is the foundation for the best

service. Every WhisperPower representative has up-to-date knowledge and the benefit of our global experience. Via periodical training courses we ensure our specialists have the latest information on installations and applications as well as our product range. As a result you are guaranteed that WhisperPower offers more than product and packaging: We offer you our expertise as standard.

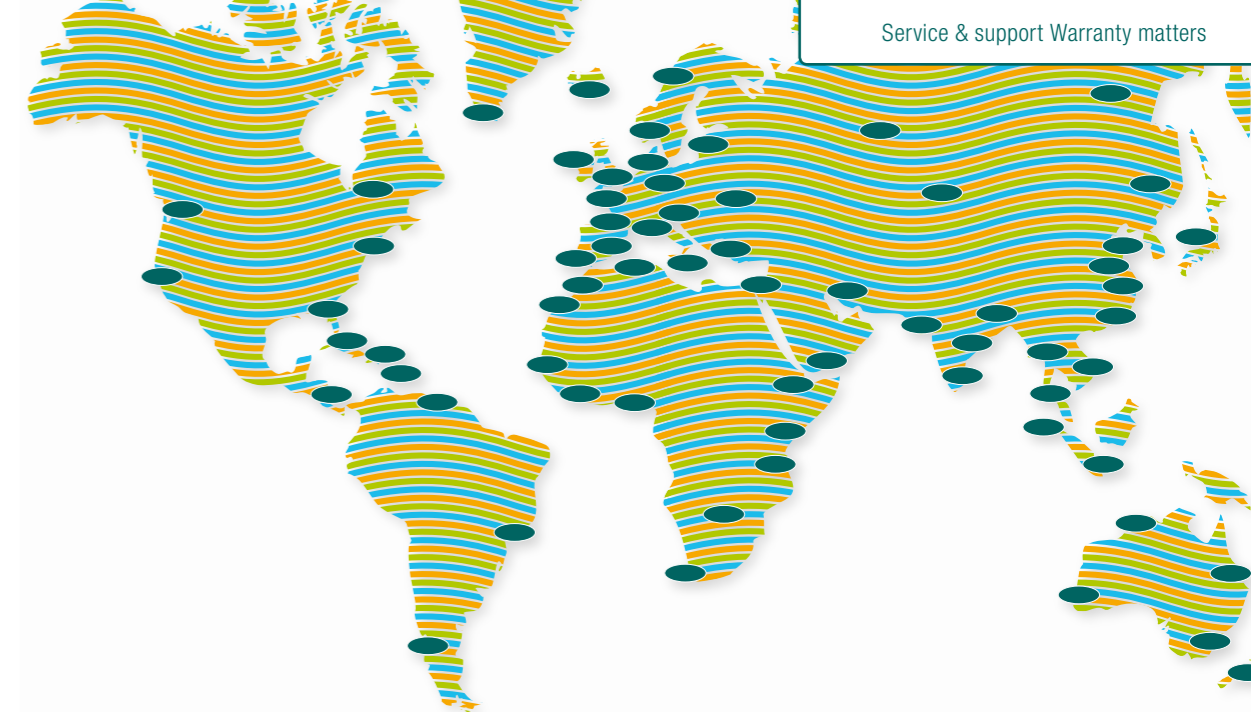
## Minimal downtime during repairs

If necessary, WhisperPower will carry out repairs or maintenance of our products at another location, in a regional workshop or

at our head office. In most cases you will be provided with a replacement solution to ensure that your system downtime is kept to a minimum.

## Up-to-date product specifications

Detailed specifications of the WhisperPower products are available on our website and in brochures and manuals. As we are continuously improving our products, specifications are subject to change without notice.



Service & support Warranty matters

## Long-term peace of mind

# The WhisperPower WarrantyPlan

When purchasing our products and systems, you always have the certainty of a dedicated WhisperPower WarrantyPlan. This plan covers as standard the costs of repairs and/or replacement of defective parts when products are used in 'normal' circumstances. The conditions for the WhisperPower WarrantyPlan are specific to the product and the use thereof in your system. The standard warranty term for equipment is two years. With an authorised system installations maintenance contract, the warranty term is extended to five years.

With sales in over 50 countries we make sure our distributors, dealers and installers serve you well;

- Extended system advice
- Selection of the right parts
- Installation of the system or generator
- Commissioning after installation
- Maintenance training
- Repair in case of a defect
- Software updates, when needed

All our efforts are aiming to reduce unnecessary downtime.



Order: [sales@whisperpower.com](mailto:sales@whisperpower.com) • [marine](#) • [mobile](#) • [autonomous/land](#) • [www.whisperpower.com](http://www.whisperpower.com)

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