



ALL THE ENERGY YOU NEED
TUTTA L'ENERGIA CHE TI SERVE



PRODUCTS CATALOGUE
2019 - 2020





ENJOY THE BEST FROM LIFE,
BRING WITH YOU
ALL THE ENERGY YOU NEED
WITH OUR ENERGY SYSTEMS

NDS

**BATTERIES, CHARGING SYSTEMS,
CONTROL DEVICE AND ENERGY MANAGEMENT SYSTEM**

Since 1999, **NDS** is the right partner for people looking for energy while travelling.

Currently our product catalogue includes: accumulators for every type of vehicle and with the most widespread construction technologies, charging systems, solar panels and charge regulators, converters and all that concerns the management and control of energy on recreational vehicles.

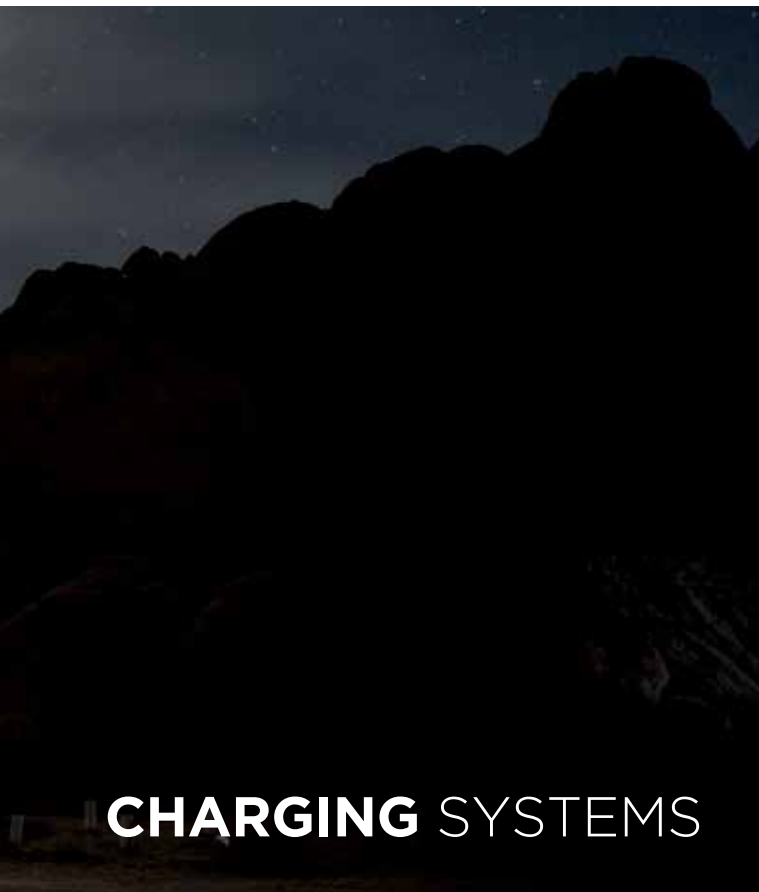
We are among the most competitive manufacturers for the camper industry in Europe and we can count on a widespread distribution network including Countries as: *Spain, Germany, France, England, Benelux, Denmark, Sweden, Norway, Finland* and of course *Italy*.

Italy is our headquarters, the core of our business: we focus on product quality combined with excellent service, which is why we have chosen to hold “in-house” the departments: repair, research and development, managed by a team of engineers, and the customer/after-sales service department.

Our standards are aligned every year with the rigorous parameters **CSQ ISO 9001:2015 9160NDS** and **IGNet REG. NR: IT-100663**, to ensure maximum efficiency for those who prefer our brand.

WHERE WE ARE





CHARGING SYSTEMS

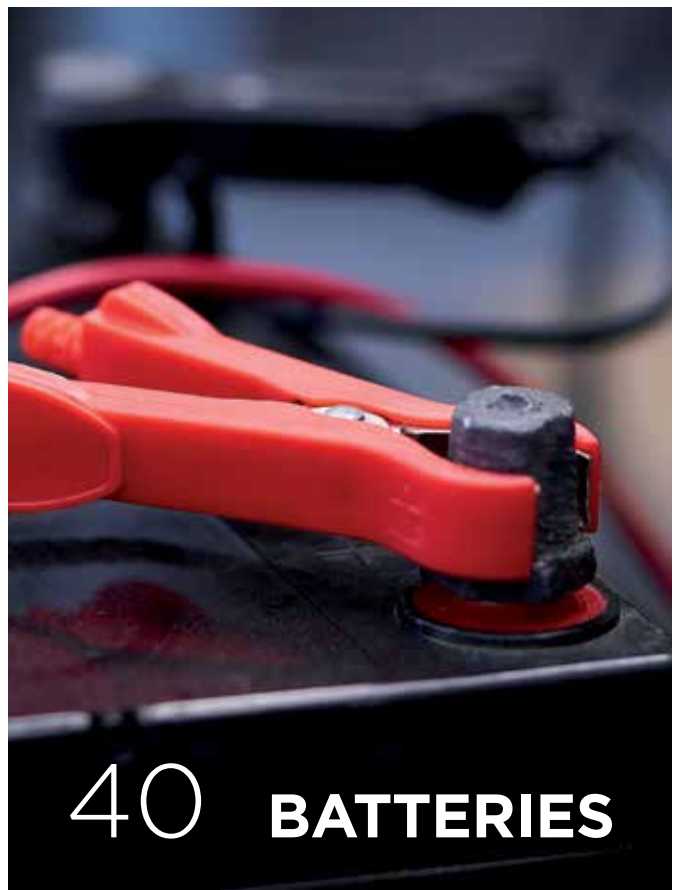


14

SOLAR
ENERGY



32 **CONVERTER**



40 **BATTERIES**

CHARGING SYSTEMS





POWERSERVICE

DC-DC AC-DC Battery charger

6



POWERCHARGER PRO

Professional battery charger

9



SMARTCHARGER

Universal battery charger



10

POWERSERVICE

Recharge **40 amps** per hour of travel,
for batteries always **100%** charged in less time.



- ✓ DC-DC BATTERY CHARGER
- ✓ UP TO 3 CHARGING SOURCES
- ✓ SELECTABLE CHARGING CURVES

POWERSERVICE is a real battery charger DC-DC, capable of recharging leisure batteries in less time than just the alternator.

POWERSERVICE available in 3 different versions, **BASIC**, **PLUS** and **GOLD**, fully automatically recharges leisure batteries installed on campers, boats, ambulances and special vehicles. The plus and gold versions integrate a charge regulator for the management of solar panels, and (*for the gold version*) a 230V mains charger, combining 3 different charging devices in a single device!

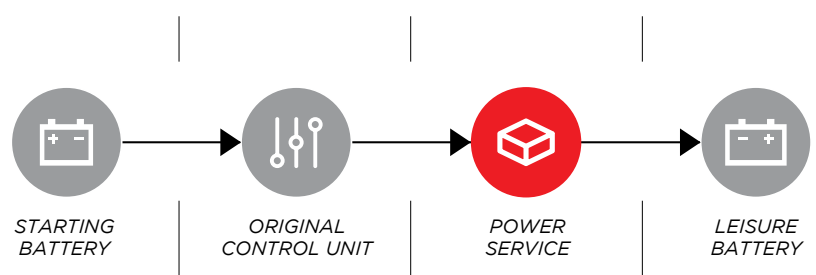
The device, controlled by a microprocessor, guarantees a full recharge in half the time compared to the alternator, thus offering more autonomy during your stops. This is also possible thanks to the optimization of the 4 charging curves, selectable through a switch that permits to choose the type of battery to be recharged between Lithium, AGM, Gel, Flooded Acid.

Each charging curve is divided into 5 stages, including the Desulphation that, besides guaranteeing a perfect charge, improves the overall performance of the battery by helping to restore the efficiency after long stops, extending its life.

Why choosing **POWERSERVICE**?

Full charge in less time, to have full autonomy during your stops.

Extend the life of your batteries with specific charging curves for all battery technologies.



Which **POWERSERVICE** to choose?



MAIN FEATURES:

- Ideal for any type of battery
- Microprocessor charge management
- Impulse charge with desulfation
- Up to 35 Ampère recharge each travel hour



POWERED BY:

- *Alternator*

BASIC

PLUS

MAIN FEATURES:

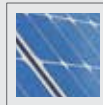
- Two different supply sources
- Microprocessor charge management
- Lithium, AGM, Gel, Flooded Acid, battery switch
- Up to 40 Ampère recharge each travel hour

COMPATIBLE
EURO 6



POWERED BY:

- *Solar Pannel*
- *Alternator*



COMPATIBLE
EURO 6



MAIN FEATURES:

- Three different supply sources
- Microprocessor charge management
- 5 stage charge with desulfation
- Lithium, AGM, Gel, Flooded Acid, battery switch
- Up to 40 Ampère recharge each travel hour



POWERED BY:

- *Alternator*
- *Solar Pannel*
- *Main power supply*

GOLD

CHECK THE TABLE WITH MODELS ON THE NEXT PAGE



TIPS

The alternator is not the best device to recharge your leisure batteries

Leisure batteries are subject to cyclical use: they are continuously discharged and recharged, while starting batteries are always loaded. Differences in design and use separate these two types of batteries, so different charging methods are required.

While for a starting battery (*rarely discharged*) it may be sufficient to use only the alternator, a leisure battery needs specific charging curves depending on the construction technology, stability and adequate power, to never be short of energy.

An alternator with adequate power and the **PowerService** represent the optimal solution to always have the maximum energy for your leisure batteries!

Choose the **POWERSERVICE** for you!



BASIC



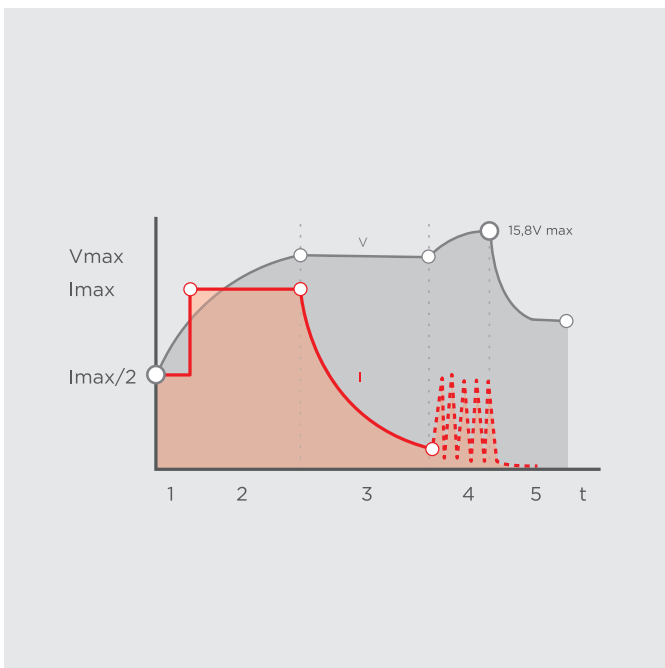
PLUS



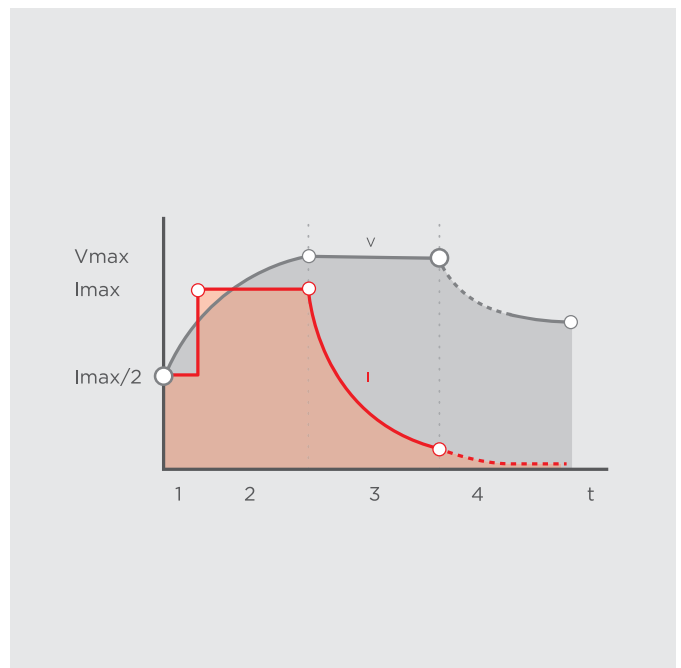
GOLD

	PRODUCT CODE	CHARGING VOLTAGE	POWER INPUT			MAXIMUM CHARGING CURRENT		
			ALTERNATOR (P.MIN)	SOLAR (MAX)	MAIN POWER SUPPLY	ALTERNATOR	SOLAR	MAIN POWER SUPPLY
BASIC	PWS 4-25	12V	70A-12V	NO	NO	25A	NO	NO
	PWS 4-30	12V	90A-12V	NO	NO	30A	NO	NO
	PWS 4-35	12V	110A-12V	NO	NO	35A	NO	NO
	PWS 12-24	24V	90A-12V	NO	NO	15A	NO	NO
	PWS 24-15	24V	45A-24V	NO	NO	15A	NO	NO
PLUS	PLUS 25	12V	70A-12V	250W	NO	25A	20A	NO
	PLUS 30	12V	90A-12V	250W	NO	30A	20A	NO
	PLUS 40	12V	110A-12V	250W	NO	40A	20A	NO
	PLUS 12-24/20	24V	110A-12V	NO	NO	20A	NO	NO
	PLUS 24-24/20	24V	55A-24V	NO	NO	20A	NO	NO
GOLD	GOLD 25-M	12V	70A-12V	250W	100/240VAC	25A	20A	20A
	GOLD 30-M	12V	90A-12V	250W	100/240VAC	30A	20A	20A
	GOLD 40-M	12V	110A-12V	250W	100/240VAC	40A	20A	20A
	GOLD 12-24-M	24V	110A-12V	NO	100/240VAC	20A	NO	20A
	GOLD 24-24-M	24V	55A-24V	NO	100/240VAC	20A	NO	20A

CHARGING CURVES



AGM/GEL



GENERIC/LITHIUM

POWERCHARGERPRO

The **professional** energy



The **NDS** chargers at high frequency, line **POWERCHARGERPRO**, are designed both for traditional and on-board use. The efficiency rate of 91% and the high reliability result from a careful development of the PCBs with components of the highest quality, for a professional use. The microprocessor automatically manages up to 5 steps of charge, optimizing them to have always correct charges and preserving the battery life. The technical staff ensures a complete and quick assistance to solve any issues, besides the possibility to customize the charger according to the type of application.

MAIN FEATURES:

- High frequency system
- Circuit with PFC
- Compact design
- 5 steps charge
- High efficiency up to 91%
- Charge curves selector Lithium, AGM, Gel, Acid
- Protection over temperature, short circuit and anomalies
- State of charge indicator

	PRODUCT CODE	OUTPUT	SIZE (mm.)			BATTERY TYPE SELECTOR
			LENGTH	WIDTH	HEIGHT	
12 VOLT	PFC0150-12CH10S	12V 10A	106	128	56	YES
	PFC0300-12CH15S	12V 15A	145	128	56	YES
	PFC0600-12CH20S	12V 20A	223	128	56	YES
	PFC0600-12CH25S	12V 25A	223	128	56	YES
24 VOLT	PFC0300-24CH10S	24V 10A	145	128	56	YES
	PFC0360-24CH12S	24V 12A	208	111	56	YES
	PFC0600-24CH15S	24V 15A	223	128	56	YES
	PFC0600-24CH20S	24V 20A	223	128	56	YES
	PFC0600-24CH30S	24V 30A	280	134	77	YES



NEW 2019

SMARTCHARGER

SMARTCHARGER is a line of advanced charger, equipped with advanced microprocessor to meet the daily needs for applications such as boating, motorcycles, cars, etc. According to the model, it performs up to 9-steps of charge; steps include the diagnosis, to check whether the battery is able to accept and maintain the charge, the desulfation which helps maintain

the plates clean from sulfate and extend the life of batteries, the maintenance (*last generation*) that keeps the battery to the 95-100% of the capacity, supplying the current when the battery starts to discharge, in order to not “stress” it during long periods of charge. (*Ex. Maintenance of a motorcycle battery during the winter*).



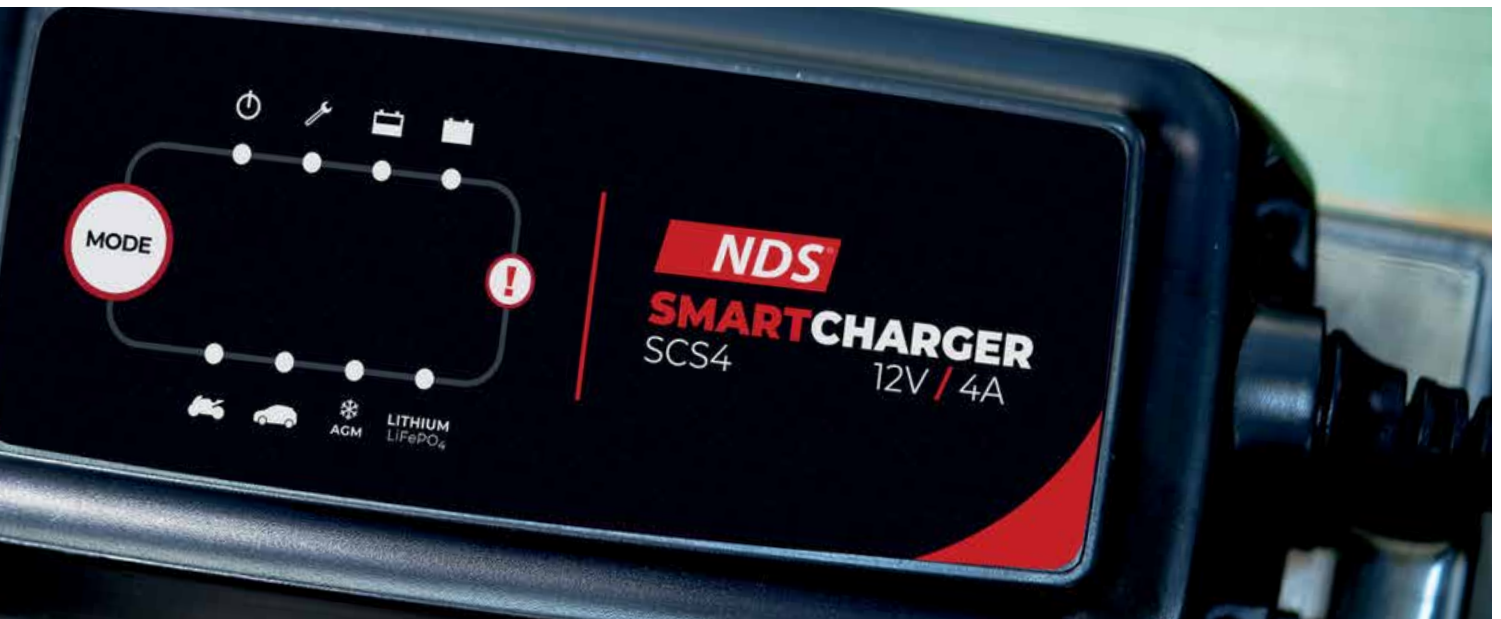
SCS2	
Rated Voltage	12V
Charging Current	2A
Charging Curves	AGM, Gel, Flooded
Charging Method	3 step
Activation Voltage	2V
Battery Charge Capacity	3-40Ah
Battery Maintenance Capacity	Up to 80Ah
Protection	IP65



SCS4	
Rated Voltage	12V
Charging Current	1 - 4A
Charging Curves	AGM, Gel, Flooded, Lithium
Charging Method	9 step
Activation Voltage	2V
Battery Charge Capacity	5-80Ah
Battery Maintenance Capacity	Up to 100Ah
Protection	IP65



SCS8	
Rated Voltage	12V
Charging Current	2 - 8A
Charging Curves	AGM, Gel, Flooded, Lithium
Charging Method	9 step
Activation Voltage	2V
Battery Charge Capacity	10-160Ah
Battery Maintenance Capacity	Up to 250Ah
Protection	IP65



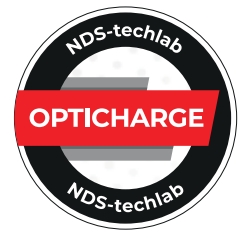
Up to **9 charging** phases

The best charging experience,
the easy way!

MAIN FEATURES:

- Plug and play
- New **OPTICHARGE** firmware
- Selectable Charging curves
- Up to **9 charging** steps
- IP65 protection

OPTICHARGE, the new firmware from **NDS** software team, for always ready and healthy batteries. Charge is optimized using technical specifications selected by **NDS** specialists, and voltage and current levels are always monitored.



SCS15	
Rated Voltage	12V
Charging Current	2 - 15A
Charging Curves	AGM, Gel, Flooded, Lithium
Charging Method	9 step
Activation Voltage	2V
Battery Charge Capacity	10-250Ah
Battery Maintenance Capacity	Up to 400Ah
Protection	IP20



SCM25	
Rated Voltage	12V - 24V
Charging Current	25A - 12,5A
Charging Curves	AGM, Gel, Flooded, Lithium
Charging Method	9 step
Activation Voltage	2V
Battery Charge Capacity	50-350Ah
Battery Maintenance Capacity	Up to 500Ah
Protection	IP20





SOLAR ENERGY



SOLENERGY
Rigid solar panels

14



BLACKSOLAR
Black solar panels

16



LIGHTSOLAR
Semi-flexible solar panels

18



SOLARFLEXEVO
Flexible solar panels

20



SUNCONTROL
Charge regulators

22



SUNCONTROL2
MPPT Regulator



23

SOLENERGY

Rigid solar panels



- ✓ MONOCRYSTALLINE CELLS
- ✓ EASY INSTALLATION
- ✓ INTEGRATED BRACKETS

The solar panels **SOLENERGY** combine modern construction technologies in the photovoltaic sector with a complete setup and easy installation. The paneled bracket integrated into the panel guarantees superior steadiness and sturdiness, allowing the panel to be kept at the correct distance from the vehicle body by facilitating ventilation and avoiding any leakage.

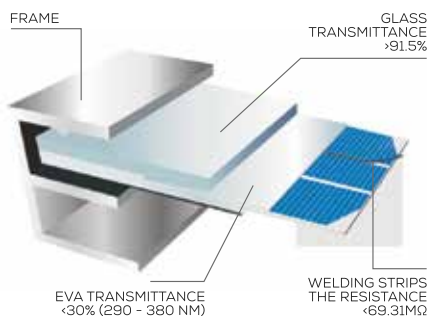
Each module is made with high pure monocrystalline silicon cells, protected by a Tedlar sheet and textured tempered glass characterized by: high transparency, low iron content and anti-reflective coating that increases the efficiency up to 18.05%, all enclosed in two sheets of **EVA** (*Ethylene Vinyl Acetate*). Special by-pass diodes protect the cells from overvoltages and minimize the loss of power due to possible shading phenomena.

Solar modules **SOLENERGY** are conformed to the most stringent **IEC61215**, **IEC61730**, and **ISO9001** / **ISO14000** certification. They resist the most difficult environmental and pollution conditions. They are equipped with by-pass diodes to protect over-voltage cells and minimize the loss of power due to shadowed areas.



INTEGRATED BRACKET

The special Alluminum brackets integrated into the panel, with aerodynamic frame and plastic side covers make the panel sturdy, safe, easy and quick to install.



STRUCTURE

Alluminum Frame
High transmittance glass: **91,5%**
Low Resistance Connection Strips: **<69,31MΩ**
Eva transmittance: **<30% (290-380MN)**.



6 MT. CABLE

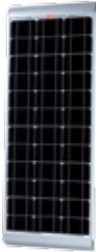
Each panel is equipped with a **6 meters** long bipolar connection cable, with an external protection sheath resistant to any climatic condition.



PSM 85WP

Cell Number	36
Rated Voltage	12V
Maximum Power	85WP±3%
Size mm	1165x530x60
Weight	9,0 kg

Open Circuit Voltage	22,79V
Short Circuit Current	4,81A
Maximum Power Voltage	18,83V
Maximum Power Current	4,52A
Cable Length 6m	2x2,5mm ²



PSM 100WP

Cell Number	36
Rated Voltage	12V
Maximum Power	100WP±3%
Size mm	1320x530x60
Weight	9,5 kg

Open Circuit Voltage	23,7V
Short Circuit Current	5,5A
Maximum Power Voltage	19,57V
Maximum Power Current	5,11A
Cable Length 6m	2x2,5mm ²



PSM 100WP-S

Cell Number	36
Rated Voltage	12V
Maximum Power	100WP±3%
Size mm	1727x416x60
Weight	10 kg

Open Circuit Voltage	22,74V
Short Circuit Current	5,66A
Maximum Power Voltage	18,94V
Maximum Power Current	5,28A
Cable Length 6m	2x2,5mm ²



PSM 120WP

Cell Number	36
Rated Voltage	12V
Maximum Power	120WP±3%
Size mm	1520x530x60
Weight	10,5 kg

Open Circuit Voltage	23,75V
Short Circuit Current	6,54A
Maximum Power Voltage	19,62V
Maximum Power Current	6,12A
Cable Length 6m	2x2,5mm ²



PSM 150WP

Cell Number	32
Rated Voltage	12V
Maximum Power	150WP±3%
Size mm	1476x676x60
Weight	12,5 kg

Open Circuit Voltage	20,85V
Short Circuit Current	9,30A
Maximum Power Voltage	17,23V
Maximum Power Current	8,71A
Cable Length 6m	2x2,5mm ²



PSM 175WP

Cell Number	36
Rated Voltage	12V
Maximum Power	175WP±3%
Size mm	1625x676x60
Weight	14,5 kg

Open Circuit Voltage	23,67V
Short Circuit Current	9,58A
Maximum Power Voltage	19,56V
Maximum Power Current	8,95A
Cable Length 4m	2x4mm ²

BLACKSOLAR

Black solar panels



- ✓ **PERC CELLS**
- ✓ **TOTAL BLACK**
- ✓ **MORE POWER, LESS SPACE**
- ✓ **EASY INSTALLATION**
- ✓ **INTEGRATED BRACKETS**

Frame, structure, cells, strings all completely black: the **BLACKSOLAR** panels capture a greater amount of solar energy and, in conditions of grazing light, such as sunrise and sunset, allowing a production of electricity higher than the standard modules.

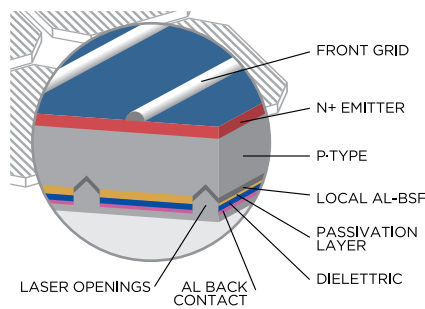
High efficiency monocrystalline cells and excellent raw materials make **BLACKSOLAR** a cutting-edge panel in the photovoltaic sector, reaching an efficiency of 19,5%.

PREMIUM solar panels



INTEGRATED BRACKET

The special aluminum brackets integrated into the panel, with aerodynamic frame and plastic side covers make the sturdy panel safe, easy and quick to install.



CELLE PERC

Passivated Emitter and Rear Cell: a new technology to increase the conversion efficiency by adding a dielectric passivation layer on the rear of the cell.



6 MT. CABLE

Each panel is equipped with a **6 meters** long bipolar connection cable, with an external protection sheath resistant to any climatic condition.



TUTTA L'ENERGIA CHE TI SERVE
ALL THE ENERGY YOU NEED



BS 115WP

Cell Number	36
Rated Voltage	12V
Maximum Power	115WP±3%
Size mm	1320x530x60
Weight	9,5 kg

Open Circuit Voltage	24,83V
Short Circuit Current	5,95A
Maximum Power Voltage	20,54V
Maximum Power Current	5,60A
Cable Length 6m	2x2,5mm ²



BS 155WP

Cell Number	32
Rated Voltage	12V
Maximum Power	155WP±3%
Size mm	1476x676x60
Weight	12,5 kg

Open Circuit Voltage	21V
Short Circuit Current	9,45A
Maximum Power Voltage	16,9V
Maximum Power Current	9,17A
Cable Length 6m	2x2,5mm ²



BS 180WP

Cell Number	36
Rated Voltage	12V
Maximum Power	180WP±3%
Size mm	1625x676x60
Weight	14,5 kg

Open Circuit Voltage	24V
Short Circuit Current	9,70A
Maximum Power Voltage	19,4V
Maximum Power Current	9,28A
Cable Length 4m	2x4mm ²

+ PLUS

DISCOVER ALL OPTIONS FOR SOLAR AT PAGE 21

LIGHTSOLAR

Semi-flexible solar panels

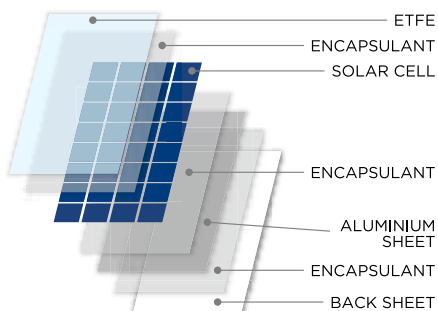


- ✓ BACK JUNCTION BOX OPTION
- ✓ MONOCRYSTALLINE CELLS
- ✓ LIGHTS
- ✓ FLEXIBILITY 5%

LIGHTSOLAR is the “Glass & Frameless” range of solar panels designed for applications where weight, thickness and resistance are fundamental characteristics.

The cells of these monocrystalline panels, with an efficiency of 18.75%, are embedded in an exclusive multi-layer structure: the upper layer is a plastic polymer called **ETFE** highly resistant to corrosion and weathering, such that it can be defined as self-repairing. The surface of the panel, always exposed to scratches from tree branches, hail, sharp surfaces or other accidental shocks, is able to self-model, returning to the initial shape ideal for capturing sunlight.

The lower layer of the structure is composed by an Aluminum sheet to contain and dissipate as much as possible the heat generated by the cells and to give the panel such strength that it is also perfect for nautical applications, where (*with suitable and soft footwear*) it is possible to step on the panel.



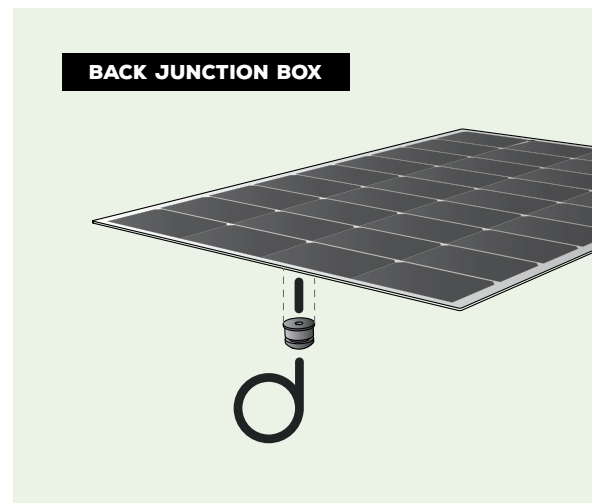
STRUCTURE

Built with **7 layers**, including the **ETFE** surface, the best surface in terms of efficiency and durability, and an aluminum sheet that tightens it making it more robust and improving the dissipation of heat.



JUNCTION BOX

The **NDS** aerodynamic box contains the supplied **3 meters** connection cable and the bypass diodes required to reduce shading.





LS 105WP

Cell Number	36
Rated Voltage	12V
Maximum Power	105WP±3%
Size mm	1000x670x3
Weight	4 kg

Open Circuit Voltage	21,36V
Short Circuit Current	6,07A
Maximum Power Voltage	17,8V
Maximum Power Current	5,90A
Cable Length 3m	2x2,5mm ²



LS 145WP

Cell Number	36
Rated Voltage	12V
Maximum Power	145WP±3%
Size mm	1200x670x3
Weight	5,5 kg

Open Circuit Voltage	23,76V
Short Circuit Current	7,64A
Maximum Power Voltage	19,8V
Maximum Power Current	7,32A
Cable Length 3m	2x2,5mm ²



LS 105WP-B

Cell Number	36
Rated Voltage	12V
Maximum Power	105WP±3%
Size mm	945x665x3
Weight	4 kg

Open Circuit Voltage	21,36V
Short Circuit Current	6,07A
Maximum Power Voltage	17,8V
Maximum Power Current	5,90A
Cable Length 3m	2x2,5mm ²



LS 180WP-B

Cell Number	36
Rated Voltage	12V
Maximum Power	180WP±3%
Size mm	1470x665x4
Weight	6,5 kg

Open Circuit Voltage	24,0V
Short Circuit Current	9,72A
Maximum Power Voltage	20V
Maximum Power Current	9,0A
Cable Length 3m	2x2,5mm ²

This special version of LightSolar has a completely flat surface, thanks to the use of a new connection method called **Back Junction Box** and laminated diodes included in the frame of the panel itself.

The position of the connection cable, on the back, eliminates the **Junction Box** from the exposed surface of the panel. The round box, only 30mm in diameter, tightens the cable, making the connection solid and secure.

This version is **ideal for pop top roofs**, minimizing space requirements, eliminating cable clutter, as well as unsightly and complex cable boxes.



SOLARFLEXEVO

Flexible solar panels

NEW 2019

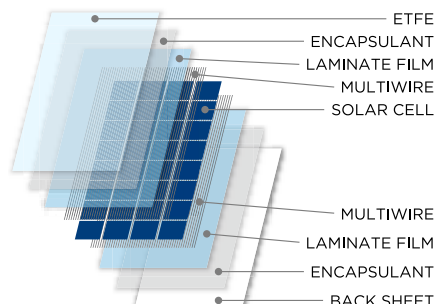
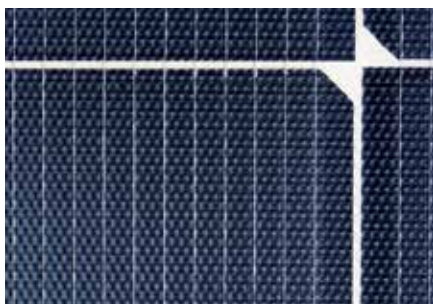
- ✓ ULTRA LIGHTS
- ✓ MONOCRYSTALLINE CELLS
- ✓ FLEXIBILITY 30%
- ✓ LONGER LIFE WITH ETFE SURFACE



Adapts to nonlinear surfaces thanks to a high degree of flexibility, provides maximum performance with the minimum possible footprint: all this is **SOLARFLEXEVO**.

SOLARFLEXEVO is the ideal choice in the Nautical and Camper sectors where the yield is optimal. To ensure the best results in the smallest possible space, the **SOLARFLEXEVO** range is built with quality and high-efficiency cells.

Energy has never been so **FLEXIBLE**



MULTIWIRE CELLS

The higher number of connections and the smaller cell distance (*7 times less than 3bb cells*), significantly increases the current flow. Improved resistance to micro-breaks of cells.

The dual multiwire “**front and back side**” connection dissipates **50%** more heat than a standard cell and ensures optimum efficiency even in the hottest seasons.

STRUCTURE

Built with **9 layers**, including the **ETFE** surface, the best surface in terms of efficiency and durability.

JUNCTION BOX

Each panel is equipped with a special **Junction Box**: location of the bipolar connection cable **3 meters** long, with external protective sheath resistant to all weather conditions.

MAIN FEATURES:

- Multiwire cells
- Encapsulated with 9 layers
- Immune from micro-cracks
- Efficiency 20%
- Excellent efficiency at high temperatures
- Low power loss in case of shading



SFE 50WP

Cell Number	32
Rated Voltage	12V
Maximum Power	50WP±3%
Size mm	660x510x3
Weight	1,5 kg

Open Circuit Voltage	20,4V
Short Circuit Current	3,08A
Maximum Power Voltage	17,3V
Maximum Power Current	2,91A
Cable Length 3m	2x2,5mm ²



SFE 110WP

Cell Number	33
Rated Voltage	12V
Maximum Power	110WP±3%
Size mm	1280x510x3
Weight	3 kg

Open Circuit Voltage	21,2V
Short Circuit Current	6,53A
Maximum Power Voltage	17,7V
Maximum Power Current	6,24A
Cable Length 3m	2x2,5mm ²



SFE 150WP

Cell Number	44
Rated Voltage	12V
Maximum Power	150WP±3%
Size mm	1280x680x3
Weight	3,5 kg

Open Circuit Voltage	28,3V
Short Circuit Current	6,63A
Maximum Power Voltage	23,6V
Maximum Power Current	6,35A
Cable Length 3m	2x2,5mm ²



PLUS

OPTION

Solar Panels

Cod. PST / PG 9 / PG 13.5



Cablebox for
cable routing with
2PG configuration

SUNCONTROL

Solar panels Regulator

SUNCONTROL is the charge controller that can maximize performances for your photovoltaic modules. Depending on the model is capable of handling up to 300W in input, with a maximum charge of 18A. The microprocessor is capable of up to four charge phases, including the important phase of desulfation, which guarantees longer life to your batteries. There are two versions of **SUNCONTROL**: the **SC15-240** model with **PWM** technology and the **SC300M** model with **MPPT** technology, which maximizes the potential of the solar panel, improving its yield by up to 25%.



SC 15-240	
Rated Voltage	12V
Module Max Power	240W
Maximum Charging Current	15A
MPPT System	NO
Protection Fuse	25A
Starting Battery Charge	YES
Size (mm)	103x86x50
Display	NO



SC 300M	
Rated Voltage	12V
Module Max Power	300W
Maximum Charging Current	18A
MPPT System	YES
Protection Fuse	25A
Starting Battery Charge	YES
Size (mm)	103x86x50
Display	Optional

MAIN FEATURES

SC 15-240:

- 4-step charging curves
- Integrated desulfator
- Dedicated output for starting battery
- PWM Technology
- Flooded acid, Gel and Agm battery selector
- Input for two photovoltaic modules
- Led charge indicator
- Input power up to 240 W

MAIN FEATURES

SC 300M:

- 4-step charging curves
- Integrated desulfator
- Dedicated output for starting battery
- MPPT Technology
- Flooded acid, Gel, Agm and Lithium battery selector
- Input for two photovoltaic modules
- Led charge indicator
- Input power up 300W



PLUS

SUNCONTROL

Display

This **LCD Touchscreen display** allows to quickly and easily view the charging status of the panels and provides a general indication about the status of the leisure batteries. Equipped with 6mt. of communication cable, it can be directly connected to the **SunControl** or **SunControl2**.

Cod. DT 001



COMPATIBLE ONLY WITH:

SC 300M

Cod. DT 002



COMPATIBLE WITH:

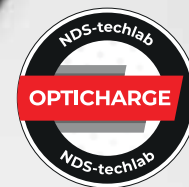
SC 320M / SC 350M

SUNCONTROL2

MPPT Regulator

NEW 2019

- ✓ TEMPERATURE SENSOR
- ✓ LATEST GENERATION LIN-BUS/CI-BUS COMMUNICATION PROTOCOLS
- ✓ PROFESSIONAL TERMINAL BLOCK
- ✓ RECHARGE STARTING BATTERY
- ✓ 5-STAGES CHARGING CURVES
- ✓ DESULPHATION SYSTEM
- ✓ LED CHARGING STATUS
- ✓ SEPARATE INPUT FOR PANEL



SUNCONTROL2 is the latest and most innovative charge regulator from **NDS**. The **MPPT** technology allows to optimize the energy from any solar panel, performing the most modern charging curves, for batteries always charged and efficient over time. Solid and functional thanks to the professional terminal block and equipped with updated communication protocols LIN-BUS / CI-BUS, **SUNCONTROL2** is ideal for an installation destined to last over time.

Available in two different versions: **SC320M** with input for two panels up to **320W** (without cooling fan) and **SC350M** which supports up to **350W**. The charge regulator is the heart of the photovoltaic system, choosing suncontrol2 means making the most of all the potential of today and the future.

SC 320M	
Rated Voltage	12V
Module Max Power	320W
Maximum Charging Current	20A
MPPT System	YES
Protection Fuse	25A
Starting Battery Charge	YES
Fan	NO
Size (mm)	151x90x48

SC 350M	
Rated Voltage	12V
Module Max Power	350W
Maximum Charging Current	24A
MPPT System	YES
Protection Fuse	30A
Starting Battery Charge	YES
Fan	YES
Size (mm)	151x90x48



TIPS

WHAT DOES MPPT MEANS?

This is the algorithm that allows to always exploit the "Maximum power point track" supplied by the panel. A charge regulator with **MPPT** technology can achieve a significantly higher efficiency than PWM technology (up to 25% more). The **MPPT** regulator is ideal where space is limited because in less space you get more energy!



MANAGEMENT
AND **CONTROL**



IMANAGER

Multi-battery management

26



POWERSWITCH

Battery **Switch**

28



BATTERYSAVER

Automatic **Switch-off** battery

28



ENERGMETER

Battery **info display**

29



SMARTSEPARATOR

Battery **Separator**

29

IMANAGER

To manage all your energy



- ✓ AUTOMATIC MANAGEMENT OF TWO LEISURE BATTERIES
- ✓ DISPLAY CHARGING STATUS

IMANAGER is the innovative system that manages all the on-board batteries and energy needs. It mainly allows avoiding the connection in “permanently parallel” of leisure batteries. It manages, simultaneously or separately, up to three batteries with different technologies and amperage. It improves their efficiency and preserves their duration, thanks to the automatic battery cut-off.

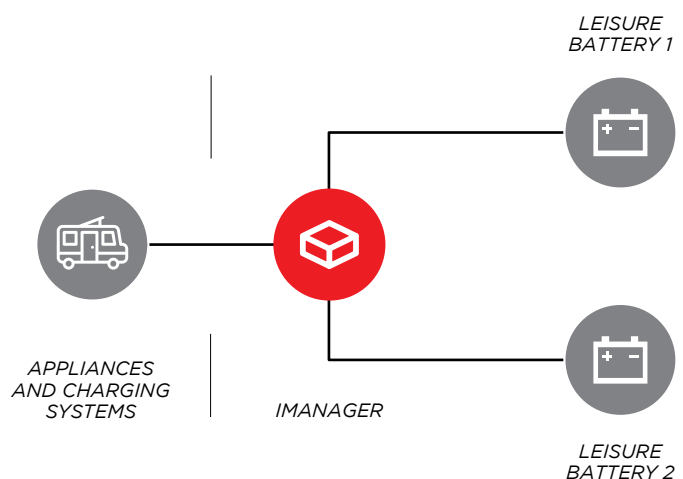
The **IMANAGER** Touchscreen displays any available information on both the accumulators charge level and the possible uses, and it allows you to manually activate or deactivate batteries by one touch, for a more customised management. **IMANAGER** constantly monitors the voltage of its two batteries keeping into account the charge and discharge currents, decides and automatically selects the battery to be used, and aims at keeping the same level of charge to improve their performances.

Why do you need IMANAGER?

To install two service batteries in total safety, avoiding the obsolete and not recommended parallel, requires an electronic device that manages the system.

iManager permits the installation of batteries different from each other in: technology (AGM, Gel, Flooded), power and date of production.

Choose your batteries in total freedom, iManager takes care of the rest!



MAIN FEATURES:

- Automatic or manual management of one or two leisure batteries, even of different technology and amperage
- Specific starting battery output, when leisure batteries are 100% charged (e.g.: storage)
- It shows the batteries charging state
- Shows charge and discharge Ampere and tension
- Date and time visualization
- Battery switch-off automatic (below 11V) or manual, through the Touchscreen.
- It shows information and recommendations on the batteries management and maintenance
- Temperature monitoring during charge/discharge, for an improved security
- BlackBox/Display connection available through cable (cod. iM 12-150) and wireless (cod. iM 12-150W).



Sample screenshot Automatic and/or Manual

BLACKBOX		
Product Code	IM 12-150	IM 12-150W
Consum. with connected batt.	8mA	22mA
Consum. with disconnected batt.	4mA	4,2mA
Functional Mode	Automatic and Manual	
Relays Maximum Current	100A + 100A	
Rated Voltage	12V (9V - 18V)	
Working Temperature	-15°C / +65°C	
Batteries Disconnection Range	Voltage: 10,5V Temperature: 70°C	

DISPLAY TOUCH		
Product Code	IM 12-150	IM 12-150W
Maximum Bright Consumption	86mA	90mA
Display Off Consumption	38mA	40mA
Consum. with disconnected batt.	8mA	8mA
Connection Type	7mm Cable with Low Profile Connector	Wireless
Working Mode	Normal and Low Consumption	
Display Type	TFT2,83" / 262 k colours / touchscreen	
Working Temperature	-10°C / +70°C	

Among its multiple features, one of the most noteworthy is the automatic battery switch-off, which is activated under three different circumstances:

- When the voltage of one or both batteries is below the critical limit of 10,5V.
- When the voltage of one or both batteries stays below 11V for more than 15 minutes.
- When the temperature measured on one or both batteries is above the limit of 70°.

In this way, decreased efficiency and fatal damages are avoided.



TIPS

Why avoiding the parallel?

The parallel between several batteries, as well as not representing the maximum efficiency, constraints the purchase of batteries as similar as possible as brand, model, power. The two batteries will work together as one and the deficits of one will affect the other, reducing both their performances and durability.

When the parallel system experiences a fault, or a loss of efficiency, both batteries will need to be replaced.

POWERSWITCH

Automatic switch

Cod. PS 12-100

POWERSWITCH is an automatic switch which allows managing two leisure batteries separately. Since electric consumption in Camper increases, you need greater quantities of energy available.

A second leisure battery can meet this need, as it ensures a broader range although it cannot be connected in parallel in case they are not "twins" (*which means identical in terms of technology, amperage, brand and production lot*).

MAIN FEATURES:

- Automatic management of two batteries, also of a different technology and capacity
- Automatic (below 11V) or manual battery switch-off
- Up to 2000W management both input and output
- Batteries temperature control by built-in sensors
- Remote control provided



TECHNICAL FEATURES

Rated Voltage	12V
Relays Maximum Current	100A
Appliances Disconnection Voltage	10,5V
Self-Consumption	15mA
Display Cable Length	3mt
Size	121x108x50mm

BATTERYSAVER

Automatic battery switch-off

Cod. BS 12-100

BATTERYSAVER is an automatic battery switch-off which constantly monitors the battery voltage, disconnecting it from any utility in case it goes below the critical 11V threshold.

It thus protects the battery against any efficiency loss or fatal damage due to deep discharges. It also has a "Manual" mode button which allows disconnecting all the utilities at any moment.

Therefore, a manual restart is possible or automatic reset through a charging source (e.g.: *alternator, 230V charger or solar panel*).

MAIN FEATURES:

- Automatic (*below 11V*) or manual battery switch-off
- Up to 1200W management both input and output
- Led Operation indicator
- Automatic battery switch back on (*when a charging source is available*)



TECHNICAL FEATURES

Rated Voltage	12V
Maximum Current	100A
Appliances Disconnection Voltage	10,5V
Self-Consumption	4,5mA
Size	121x108x50mm

ENERGYMETER

Meter with display

Thanks to the wireless display, the battery status will always be under control. **ENERGYMETER** is a current and voltage meter, consisting of two units that can be installed on any vehicle.

The main unit, installed close to the battery, is combined with the display communicating continuously via wireless, in order to detect constantly voltage and current values (range 0-100A). The processed data are transmitted for reading to the remote display (or several displays at the same time) which will allow the user to monitor the battery energy balance in real time.



Cod. EM 12-100

MAIN FEATURES:

- Input and output current data
- Operating time charge/discharge data
- Total amount charged/discharged current

TECHNICAL FEATURES

Data Transmission Frequency	ASK 433,92 MHz
Maximum Signal Range	6mt
BLACK BOX	
Rated Voltage	12V
Maximum Current	100A
Appliances Disconnection Voltage	10,5V
Self-Consumption	12mA
Size	121x108x50mm
Weight	241 g
DISPLAY	
Rated Voltage	12V
Self-Consumption	3mA
Size	105x86x25mm

SMARTSEPARATOR

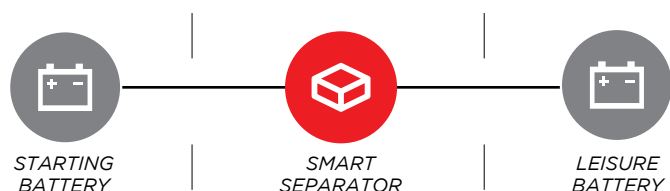
Automatic paralleling

SMARTSEPARATOR is an automatic device that allows the on-board management of a starting battery and a leisure battery.

Thanks to the integrated microprocessor, it will be able to monitor automatically the voltages of the connected batteries and will manage the main function of putting the starting and the leisure battery in parallel only in the event that the first one is in a state of charge.

This function allows vehicles to recharge the leisure battery with a simple and quick installation without having to use a parallel relay controlled by an ignition switch or D+.

Another important function is the manual or automatic battery switch-off that prevents deep discharges: if the leisure battery voltage drops below the critical threshold of 10.5V.

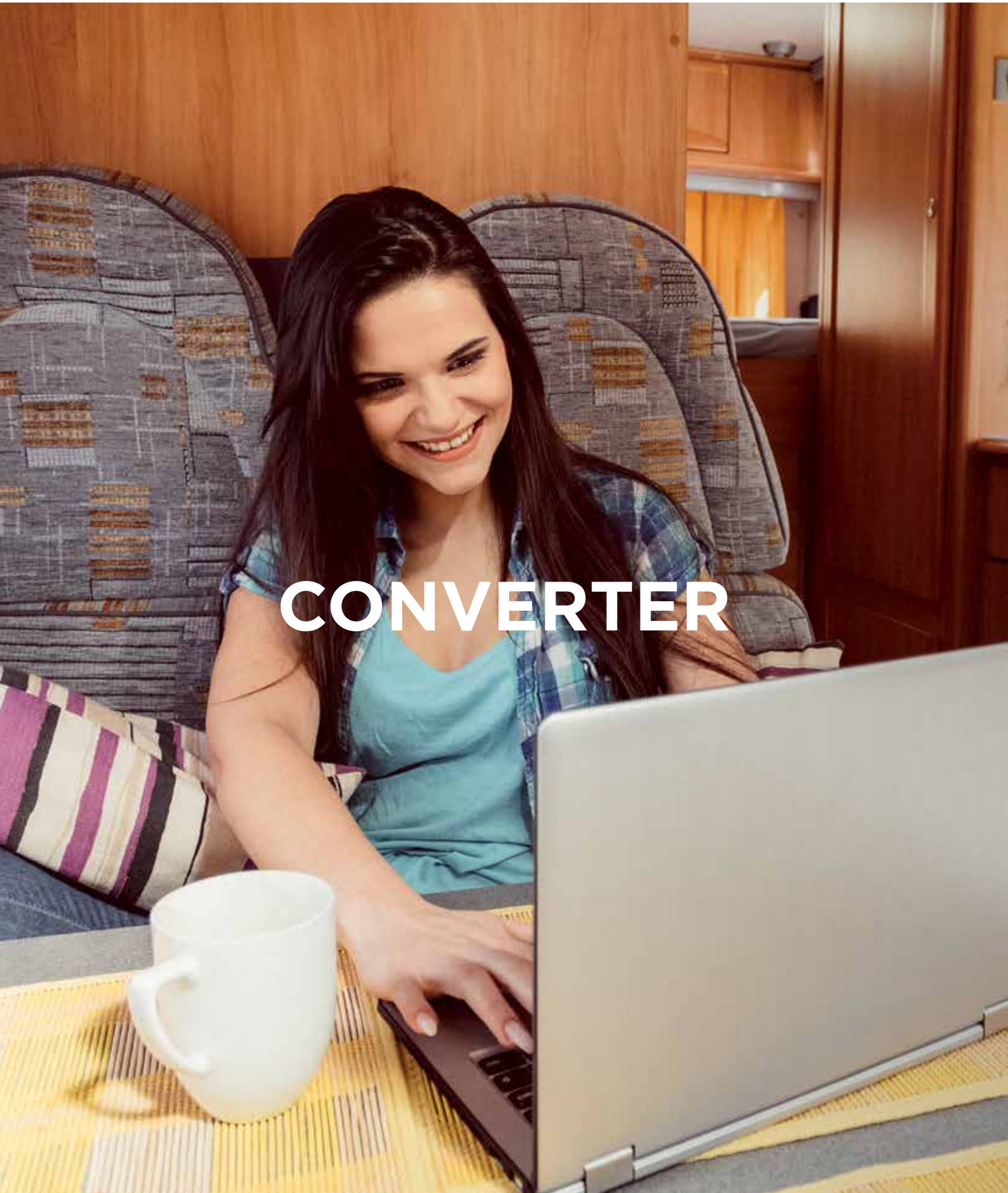


Cod. SS 12-100



TECHNICAL FEATURES

Rated Voltage	12V
Maximum Current	100A
Self-Consumption	5mA
ON / OFF Split-Charge Relay Voltage	13,3V / 12,7V
ON / OFF Battery Switch-Off	10,6V / 12V
Size	121x108x50mm



CONVERTER



SMART-IN

The **high-quality** inverter

32



SMART-LINK

DC Link manager

36



PRIORITY SWITCH

IVT Function

37



POWERNEGATIVE

Negative Booster

37

SMART-IN

The **high-quality** inverter



- ✓ HIGH PERFORMANCES
- ✓ NOISELESS
- ✓ MAXIMUM RELIABILITY

SMART-IN are the inverters, remarkable for design and quality. Designed to provide high performances, maximum safety, reliability and, above all, silent operation, important for those who install the inverter inside the recreational vehicle. Thanks to the **NDS** advanced engineering solutions, **SMART-IN** inverters are also suitable for professional use.

The **SMART-IN** family consists of two lines: Modified and Pure distinguished by the output waveform. The two product lines cover a wide range of powers from 400W to 3000W, with the possibility (for some models) to have 24V input voltage.



PROFESSIONAL CONNECTORS

Connections welded directly to the PCB with high conductivity bars prevent voltage drops, power losses and lower battery consumption.



IN/OUT IVT INVERTER

The standard versions have one or two output sockets, while for the models with IVT (*integrated priority function*), there is one output socket and one input socket (*IEC*), protected by a fuse, where the external main is connected.



EASY INSTALLATION

The integrated mounting feet allow a safe installation in any position. Supplied with ultra-flexible input connection cables, specific and already sized for the device.

MAIN FEATURES:

- High efficiency up to 93%
- Low self-consumption
- Input with professional connectors
- Predisposition for remote control ON/OFF
- Input and output completely isolated

PROTECTIONS:

- Soft Start
- Protection against overload and Short circuit
- Low battery alarm
- Protection against polarity inversion
- Over-temperature protection

Distinctive features

SMART-IN inverters can boast the lowest self-consumption on the market and consider that very often an inverter remains in standby mode, thus continuing to consume current, minimizing this absorption is essential and of great benefit to the user who will not discharge the battery unnecessarily.

- The input and output are completely isolated, to avoid that any anomalies from the equipment connected to the output may damage that connected to the input and vice-versa, thus ensuring a high level of safety.
- Professional connectors which, as opposed to the standard cheaper inverters on the market, are directly integrated into the PCB, thus allowing a substantial reduction of voltage drop on the connection between the device and the battery. This improves its performance and, at the same power absorbed by 230V equipment (e.g. TVs), the battery consumption is lower than with the traditional inverters.

You just need a good inverter for a good coffee.

SMART-IN PURE:

- **SP - 1500**
- **SP - 3000**
- **SP - 1500-i**
- **SP - 2000-i**

In RV, like at home!



TIPS

Pure or Modified Wave?

Smart-In Pure, with sophisticated electronics, generates a 230V output with “*pure sine wave*”, the same type of domestic electrical network. An essential solution for sensitive and valuable devices, such as laptop PCs, air conditioners, coffee machines.

Smart-In Modified, with a relatively simpler and cheaper electronic circuit than the Pure version, generates a “*modified sine wave*”, similar to a square wave.

This series is recommended for simpler loads, such as lighting, resistive loads... etc.

Remember: The modified wave may shorten the life of your devices.



PURE SINE WAVE



MODIFIED SINE WAVE

SMART-IN MODIFIED

Modified sine wave



TECHNICAL FEATURES

PRODUCT CODE	INPUT VOLTAGE	CONTINUOUS POWER	PEAK OUTPUT POWER	OUTPUT VOLTAGE	USB OUTPUTS	SIZE (mm)	CABLE INCLUDED
SM 400	12V	400W	800W	230VAC	5V 2,1A	184x140x71H	6mm ² length 80cm
SM 600	12V	600W	1200W	230VAC	5V 2,1A	214x140x71H	10mm ² length 80cm
SM 1000	12V	1000W	2000W	230VAC	5V 2,1A	262x270x121H	16mm ² length 80cm
SM 1500	12V	1500W	3000W	230VAC	5V 2,1A	262x270x107,5H	25mm ² length 80cm
24V							
SM 600-24	24V	600W	1200W	230VAC	5V 2,1A	214x140x71H	10mm ² length 80cm

SMART-IN PURE

Pure sine wave

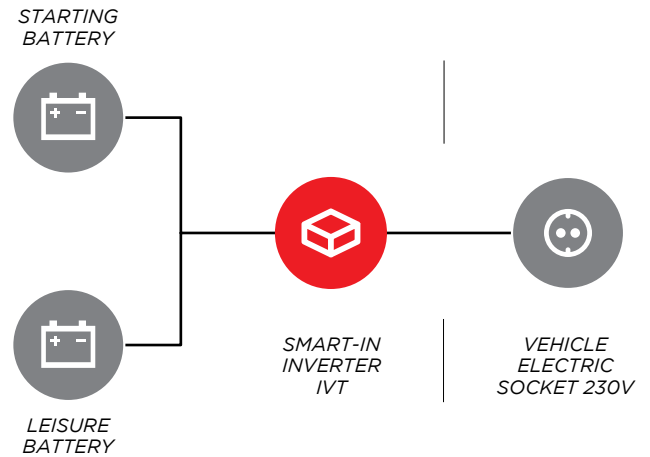


TECHNICAL FEATURES

PRODUCT CODE	INPUT VOLTAGE	CONTINUOUS POWER	PEAK OUTPUT POWER	OUTPUT VOLTAGE	USB OUTPUTS	SIZE (mm)	CABLE INCLUDED
SP 400	12V	400W	1000W	230VAC	5V 2,1A	214,5x140x71H	6mm ² length 80cm
SP 600	12V	600W	1500W	230VAC	5V 2,1A	244,5x140x71H	10mm ² length 80cm
SP 1000	12V	1000W	3000W	230VAC	5V 2,1A	262,4x270x107,5H	16mm ² length 80cm
SP 1500	12V	1500W	4000W	230VAC	5V 2,1A	322,4x270x107,5H	25mm ² length 80cm
SP 3000	12V	3000W	8000W	230VAC	5V 2,1A	412x270x107,5H	35mm ² length 80cm
24V							
SP 600-24	24V	600W	1500W	230VAC	5V 2,1A	244,5x140x71H	10mm ² length 80cm
SP 1500-24	24V	1500W	4000W	230VAC	5V 2,1A	322,4x270x107,5H	25mm ² length 80cm
SP 3000-24	24V	3000W	8000W	230VAC	5V 2,1A	412x270x107,5H	35mm ² length 80cm

SMART-IN PURE IVT

Pure sine wave



SMART-IN PURE with **IVT** function is a line of inverters with an **integrated system of priority** (*Priority Switch type*). This special **IVT** function, through the two input and output 230V sockets, allows the management of the voltage that comes out from the inverter connected to the battery and to the external mains.

When the electronic network is available is connected to the external grid, it will have the priority in order to preserve the battery; otherwise, when the main is disconnected, the inverter use the battery to supply the 230V.

DISTINCTIVE FEATURES:

- By-pass integrated function
- Relay time change from inverter 230 VAC to external main= 20 ms
- Relay time change from 230 VAC external main to inverter = 100 ms



TECHNICAL FEATURES

PRODUCT CODE	INPUT VOLTAGE	CONTINUOUS POWER	PEAK OUTPUT POWER	OUTPUT VOLTAGE	USB OUTPUTS	SIZE (mm)	CABLE INCLUDED
SP 1000-I	12V	1000W	3000W	230VAC	5V 2,1A	262,4x270x121H	16mm ² length 80cm
SP 1500-I	12V	1500W	4000W	230VAC	5V 2,1A	322,4x270x121H	25mm ² length 80cm
SP2000-I	12V	2000W	6000W	230VAC	5V 2,1A	385x270x107,5H	35mm ² length 80cm



TIPS

What is the **IVT** function?

More frequently, the inverter is the only solution for powering loads in the vehicle, but its dimensions and power (*above 1000W*) make it impractical to move as required. The **IVT** function is a priority system that allows the inverter to automatically power itself from the 230V mains, when available, and return to using the battery when necessary.

This function makes it possible to safely connect the inverter output to the vehicle's electrical circuit, so as to always have all the sockets powered, leaving the inverter conveniently installed near the leisure battery.



BEST WITH

SMART-LINK

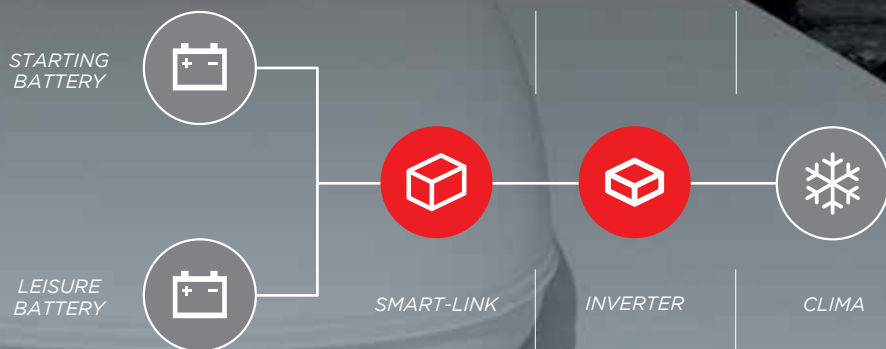
DC Link Manager

Cod. SL 12-100

It is an intelligent 12V DC power distributor that can be installed on any system, and combined with an inverter, allows the use of heavy loads, even when the vehicle is running, always keeping the electrical system and the batteries safe.

By connecting to **SMART-LINK**: inverter, starting battery and leisure battery you can use air conditioners, without risk (*with batteries of adequate capacity*).

The device is equipped with a three-way connector to which are connected the contacts of a dedicated relay (A, B and C) that can be used, e.g. to manage air conditioners with an economy function, temporarily turning off the compressor and leaving the rest of the circuit active.



PLUS

ACCESSORIES

Inverter



REMOTE CONTROL

Remote control for inverter. Allows to turn the inverter on and off from distance.

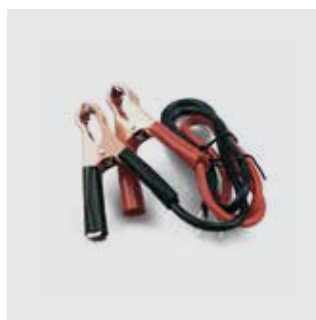
Cod. **RC02 · RC03**



FUNCTIONAL CONNECTOR

ON/OFF Remote control adaptor for inverters, to connect to every remote control.

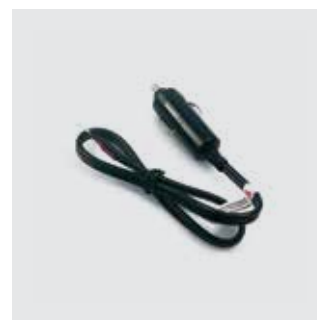
Cod. **FC02**



4MM²/6MM² CABLES

4 mm² cables with clips, 60cm length.
6 mm² cables with clips, 60cm length.

Cod. **BVR4 · BVR6**



CAR LIGHT ADAPTER

2,5 mm² cables 50 cm length, with connector.

Cod. **CLB01**

PRIORITYSWITCH

Cod. SP 230

IVT Function

PRIORITYSWITCH is an intelligent system that allows the use of the inverter and batteries only when it is really necessary. It is a management system of the 230V, useful when the system has two power sources: electrical network and an inverter connected to the battery.

By connecting the two power sources to the input of the **PRIORITYSWITCH**, the external main will always have the priority. There are two outputs, the first one to connect all loads to be used only when the main network is present, such as air conditioners, refrigerators and other big loads; the second output, instead, is dedicated to all the accessories that can be powered either by the inverter than from the main, for example, the 230V sockets of the vehicle.



TECHNICAL FEATURES	
Voltage Input/Output	230VAC / 230VAC
Maximum Output Current	13A
Fuse	15A
Inverter Maximum Power	3000W
Self-consumption	30mA only grid
Size	145x133x55mm

POWERNEGATIVE

Negative booster

The DC-DC voltage converters **NDS** line are electronic devices that can reduce a voltage of 17 ~ 32VDC in a constant of 14V \pm 10%. Three different versions are available, with an output power of 10A, 30A, 60A depending on the model. The devices appear to be very useful in all those situations where it is necessary to supply utilities with 12V rated voltage but the vehicle or the power source has a voltage of 24V.



MAIN FEATURES:

- DC-DC reducer
- Automatic charge limitation
- Soft start
- Ideal for 24V vehicles with 12V loads

MODEL	PN 2412-10	PN 2412-30	PN 2412-60
Input Voltage	13V - 40V	13V - 40V	13V - 40V
Output Voltage	14V \pm 10%	14V \pm 10%	14V \pm 10%
Maximum Output Power	10A	30A	60A
Maximum Power	140W	400W	800W
Self-Consumption	35mA	98mA	220mA
Size	121x91x48mm	152x91x48mm	238x178x68mm



BATTERIES



3LIONSYSTEM

Lithium leisure battery

40



GREENPOWER

AGM leisure battery

44



ENERGYSERVICE

Acid-flooded leisure battery

46



STARTPOWER

Acid-flooded starting battery

46

NDS

SMART ENERGY MANAGEMENT

3LION SYSTEM

Energy from the future



TECNOLOGY:

LiFePO4

3LIONSYSTEM is the advanced energy system consisting of **NDS** lithium batteries with **LiFePO4** technology and internal **BMS**, which combined with **3Link** (control unit) ensure full autonomy, in any condition! The energy system uses the advantages of Lithium technology to the best, favouring fast recharge even over short trips (through alternator). Combining these strengths with the intrinsic characteristics of the battery, such as a greater number of life cycles and low weight, make this system extremely advantageous and efficient compared to traditional lead-acid batteries.

If you love to be free and independent with **3LIONSYSTEM** you can give free expression to your wishes: connecting heavy loads, such as Air Conditioners, Coffee Machines, Phon, without reducing the capacity or creating damage to the battery shortening its life, will no longer be a problem. Unlike the Lead-Acid technology, **3LION** batteries, thanks to their high power density, concentrate large capacities in small dimensions, offering all the autonomy you need without the need for large battery packs.

Why prefer a 3LIONSYSTEM system?



ULTRA-FAST RECHARGE

The lithium technology allows recharges even in a single hour (depending on the characteristics of the system). **3LINK** (not available in other common lithium systems) bypasses the original system and, by using cables with a proper section, allows the recharge up to 75A (depending on the alternator) while traveling, without stressing the original system!



REDUCED WEIGHT

Approximately 60% less than a conventional lead-acid battery. Considering that the **3LION** lithium system allows reducing the power and quantity of electronic accessories on board, such as generators, solar panels, etc...

Weight reduction can be up to 100kg!



LONG DURATION

The charging cycles of a lithium battery can seem almost endless, about 5 times compared to those of traditional batteries.

Maintenance-free we will forget to have them on board! **2500 cycles** with discharge depth of 80%, with non-excessive discharges during their life we can reach up to **5000 cycles**.

MAIN FEATURES:

- Fast recharge, up to 75A per hour of travel
- Long life, over 2500 cycles
- Highest power and energy density
- Weight -60% of a traditional battery
- Super safe and reliable
- Free from sulphation and maintenance

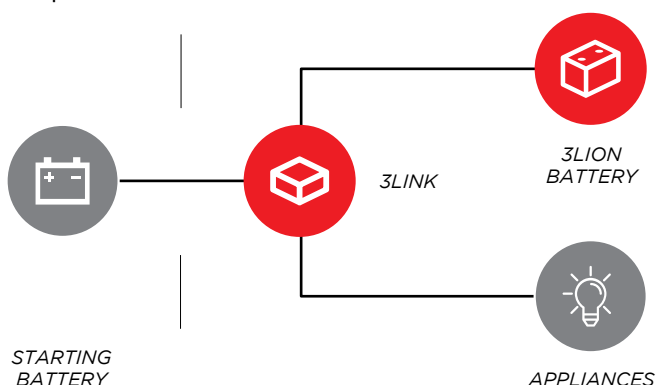
3LIONSYSTEM includes:



3LION Battery

3LION with LiFePo4 technology is extremely safe, its low internal resistance and high thermal stability excludes the risks of classic lithium. Long life: about 2500 cycles with 80% DOD, it is equipped with an internal **Battery Management System (BMS)**, fundamental for managing and preserving the cells.

The **BMS** controls voltage, current, resistance, temperature and thanks to this information keeps the cells balanced, avoiding imbalances inside the battery and protecting it from: overvoltage, under voltage, short circuit, overtemperature, overcharge. Thanks to its high power density and a more stable operating voltage, **3LION** are able (*with the same declared capacity*) to guarantee a much longer autonomy compared to the standard batteries!



3LINK Black Box and Display

3LINK is an advanced control unit, necessary for the optimization of the lithium system on recreational vehicles.

Leaving the original system unchanged, and connecting to **3LINK: 3LION** batteries, engine battery and all the loads (*control unit, battery charger, inverter, etc.*), it will be possible to optimally recharge the lithium battery with high currents while driving, without damaging the original electrical system.

Moreover, the display is able to provide information about the system operation, such as the charging status of **3LION**, the battery voltages and the charging or discharging current.

3LINK directly manages the recharge from the engine battery, connected with cables a proper section, through the blackbox can perform a super fast recharge, up to 75A per hour of travel (depending on the alternator installed).

This control unit represents an additional protection system for the precious lithium battery, indeed it constantly monitors charge, discharge and SOC currents and whenever possible (*if the lithium battery is fully charged and the charging source connected*) it also charges the engine battery.

Choose the right **3LION** for you!



3L-100B



3L-100



3L-100P



3L-150

CODE	3L-100B	3L-100	3L-100P	3L-150
Voltage	12,8V	12,8V	12,8V	12,8V
Capacity	100Ah	100Ah	100Ah	150Ah
Max continous discharging current	100A	100A	150A	150A
Max discharging current 30 min.	140A	140A	170A	175A
Max charging current	100A	100A	150A	150A
Life cycle 80% DOD	2500	2500	2500	2500
Self.consumption	<3% month	<3% month	<3% month	<3% month
Weight	13,3Kg	13,8Kg	13,8Kg	20,7Kg
Size	337x175x190mm	327x172x227mm	327x172x227mm	485x172x241mm

With **3LION** it is possible to connect up to four batteries in parallel using just one **3LINK**

You just have to buy one **3LIONSYSTEM** and add all **3LION** batteries you need (*it is advisable to use batteries with equal capacity*), the internal electronics will protect them from each other!



3LION UTILITIES

3LION Lithium batteries are ideal in all applications with higher efficiency, where previously Lead acid battery was used!

3LION batteries don't suffer deep discharges and can support heavy-duty equipment such as caravan movers, small electric motors such as winches or lifts, and other similar loads.

MAIN FEATURES:

- Maximum power, minimum space required
- Fast Charge Ready
- Long life, over 2500 cycles
- Low weight: 60% less than traditional batteries
- Sulphation and maintenance free
- Maximum safety and reliability



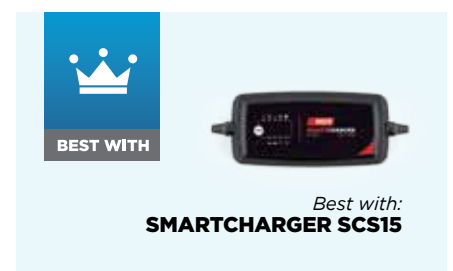
L20	
Capacity	20Ah
Energy	256Wh
Technology	LiFePO4
Rated Voltage	12,8V
Self-discharge	3% month
Max discharging current	20A
Max charging current	20A
Max charging voltage	14,4V
Weight	2,7 Kg
Size mm	181x76x166



L30	
Capacity	30Ah
Energy	384Wh
Technology	LiFePO4
Rated Voltage	12,8V
Self-discharge	3% month
Max discharging current	30A
Max charging current	30A
Max charging voltage	14,4V
Weight	4,2 Kg
Size mm	194x130x162



L60	
Capacity	60Ah
Energy	768Wh
Technology	LiFePO4
Rated Voltage	12,8V
Self-discharge	3% month
Max discharging current	60A
Max charging current	60A
Max charging voltage	14,4V
Weight	7,9 Kg
Size mm	257x132x200



GREENPOWER

The **high performance** leisure battery



- ✓ AUTONOMY, 40% MORE THAN A CONVENTIONAL BATTERY
- ✓ BATTERY LIFE, 4-7 YEARS UP TO 1200 CYCLES (AVERAGE DURATION)
- ✓ SAFETY, COMPLETELY HERMETIC, NO EXHALATIONS NOR ACID LEAKS
- ✓ USE, PLEACEABLE IN ANY POSITION AND MAINTENANCE-FREE

Non-stop research led **NDS** technicians to create in 2000 the **GREENPOWER**, an **AGM** (*Absorbent Glass Mat*) battery with gas (*VRLA*) recombination for specific use in services or leisure vehicles.

GREENPOWER The “LONG LIFE” oxygen-recombination leisure battery with slow discharge.

The **BEST** for leisure vehicles!

GREENPOWER is built with special high- density lead-calcium alloy plates, which raise charge retention for a low self-discharge (*Fig.1*) and a high number of cycles (*Fig.2*).

The electrolyte liquid is absorbed by its special glass mat separators, which prevent any leaks and allow to place batteries in any position and/or inclination, keeping constant efficiency.

The reinforced grids of the separators ensure a higher resistance against vibrations.

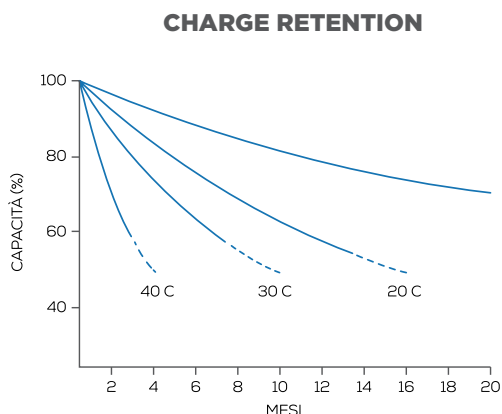


Fig. 1

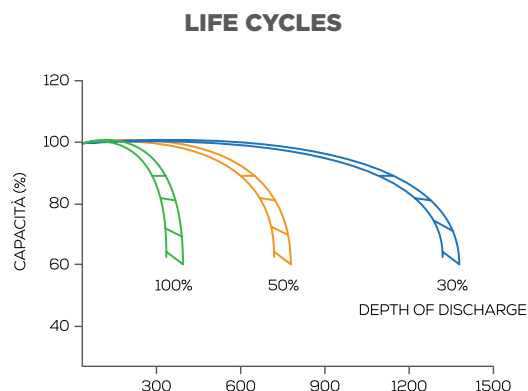


Fig. 2

GREENPOWER VRLA (Valve Regulated Lead-acid) system can recombine the gasses generated during charge and discharge, making **GREENPOWER** a totally hermetic and safe battery, free of any kind of maintenance. The case is ABS flame retardant (UL 94-VO), the rust-proof terminals resist corrosion and the cover includes the VRLA safety pressure valves.

The battery life can be affected by several factors.

- The Depth of discharge: avoid discharging the battery beyond the maximum 11V;
- The duration of discharge: do not leave the battery discharged after use;

The charging method: provide the best and most appropriate level of charge.

GREENPOWER batteries can be charged by an alternator, electronic charger and solar panels, complying with the recommended parameters (Fig. 3).

CHARGING PARAMETERS								
CONTROL USE	CHARGING METHOD	CHARGING VOLTAGE AT 20°C (V/EL.)		TEMPERATURE COEFFICIENT FOR CHARGING VOLTAGE (mV/°C/EL.)	MAX CHARGING CURRENT (CA 100%)	CHARGING TIME AT 0,1 CA TEMP. 20°C (in hours)		CHARGING TEMPERATURE (°C)
		12V	6V			FLAT	50% FLAT	
STAND-BY	CONSTANT VOLTAGE CONSTANT CURRENT (with control ON charging current)	13,5 - 13,8	6,75 - 6,90	-3,0mV °C/EL	0,3 C	24	20	FROM -10°C TO 60°C
CYCLIC		14,4 - 14,9	7,20 - 7,45	-5mV °C/EL	0,3 C	16	10	

Fig. 3

PRODUCT CODE	VOLTAGE	CAPACITY (Ah)			SIZE (mm)			TERMINALS
	VOLT	20h	10h	5h	LENGTH	WIDTH	HEIGHT	
GP 60	12	60	58	54	260	168	214	F11
GP 80	12	80	74	66	350	167	179	F11
GP 80S	12	80	74	66	260	168	214	F11
GP 90	12	90	85	75	306	169	214	F11
GP 100	12	100	96	85	330	171	220	F12
GP 100B	12	100	93	82	350	166	185	F12
GP 120	12	120	115	92	330	171	220	F12
GP 130	12	130	120	105	409	176	225	F12
GP 140	12	140	130	119	342	172	285	F12
GP 150	12	150	142	135	485	172	242	F12
GP 200	12	200	192	170	530	209	221	F12
GP 210	12	210	198	183	522	238	221	F12
GP 250	12	250	236	210	521	269	223	F12
GP 6-235	6	235	220	198	243	187	276	F12

TERMINALS			
TYPE	M	Ø	
F11	6	14	
F12	8	16	
F13	5	12	
F14	6	18	
F15	8	18	

TECHNICAL SPECIFICATIONS			
HERMETIC	TEMPERATURE	CONSTRUCTION TECHNOLOGY	STANDARD
Without exhalations and acid leakage Free of maintenance DO NOT OPEN Inclinations MAX 90°	Stated capacity at 25°C ± 3°C Operating range from -25°C / 55°C	Lead/Calcium alloy Glass matt separators ABS Case (UL 94-HB)	Compliance with the regulations IEC, JIS, EN Classified as NON HAZARDOUS

ENERGYSERVICE



ENERGYSERVICE are semi-traction batteries specific for services, built with thicker plates with radial geometry and microporous glass mat separator, which ensure a high performance.

MAIN FEATURES:

- Designed for Deep Cycles
- Vibration resistant
- Corrosion resistant thanks to a perfect contact with the active material
- Longer battery “life”

PRODUCT CODE	VOLTAGE	CAPACITY (Ah)			SIZE (mm)		
	VOLT	20h	10h	5h	LENGTH	WIDTH	HEIGHT
ES 80	12	80	74	66	270	175	190
ES 100B	12	100	96	85	353	175	190
ES 100	12	100	96	85	323	175	223

STARTPOWER



STARTPOWER are high-performance batteries, built with high-efficiency lead/calcium alloy plates. The high cranking power Premium line has lids Magic Eye charge battery indicator.

MAIN FEATURES:

- Designed for starter
- Vibration resistant
- Low water consumption

PRODUCT CODE	BOX	Ah	A (EN)	SIZE (mm)		
				LENGTH	WIDTH	HEIGHT
STANDARD						
578.038.072	L3	78	720	278	175	190
595.035.085	L4	95	850	315	175	190
600.038.085	L5	100	850	353	175	190
600.115.072	D31	100	720	308	175	223
610.042.095	L6	110	950	393	175	190
610.110.072	CB	110	720	345	175	230
PREMIUM						
580.121.072	L3/B	80	720	278	175	175
590.122.080	L4/B	90	800	315	175	175
600.044.085	L5	100	850	353	175	190

TOOLS



POWERCHARGER BATTERY

The Powercharger battery has a built-in system that can manually allowing an up to 72 hour intensive desulfation process.

This lets the battery recover its efficiency lost due to sulfate crystals on plates. Lab tests prove that more than 80% of low yield batteries are 100% recovered (*if sulfation is not irreversible*).

Cod. **PCB 12-20**



POWERTEST BATTERY

PowerTest battery lets you measure how many Ampère/hour a battery can have, therefore establishing its actual capacity.

This is useful to know the efficiency status of leisure batteries.

Cod. **PTB 12-20**



ELECTRONIC SWITCH

Electronicswitch is an electronic device that can be used instead of the alternator's D+ . According to the starting battery voltage variation, it enables or disables with a hysteresis of about 500mV.

The Electronicswitch lets the PowerService switch on and can also be used to commute any 12V relay.

Cod. **INT 12T**



DIGITAL AMPEROMETRIC CLAMP

Digital amperometric clamp with a digital multimeter. LCD 3 1/2 Digit (3200 counts) display with 33- item bar graph.

Auto/manual indication of functions and symbols. Jaw-spread fit for 50 mm cable section.

Case and leads supplied.

Cod. **MTA 101**



BATTERY POLES

Pair of automotive poles for modification \varnothing 6 and \varnothing 8 mm hole.

Cod. **CPL 06 / CPL08**



DENSIMETER

A densimeter is an ideal tool to determine the state of charge of a conventional lead acid battery.

It measures the specific weight of the electrolyte with a high precision scale in degrees Baume and specific weight with colored sections for rapid reading.

Cod. **DEN 100**



Our work standards are revised every year to meet the strictest standards
CSQ ISO 9001:2015 9160NDSE and **IQNet REG. NR: IT-100663**,
to ensure maximum efficiency for those who prefer our brand.

Our production line, our customer care and internal
logistics are updated every year with new technical tools and cutting-edge procedures to
offer those who choose our brand the right mix of products and services.



TUTTA L'ENERGIA CHE TI SERVE
ALL THE ENERGY YOU NEED



NDSENERGY S.r.l.

Via G. Pascoli, 169
65010 Cappelle sul Tavo (PE) | Italy
Tel.: +39.085.4470396
www.ndsenergy.it | info@ndsenergy.it

